



**US Army Corps
of Engineers®**

Wilmington District

**Environmental Assessment
Clearing and Snagging Operations
U.S. Army Corps of Engineers
Wilmington District**



October 2004

Environmental Assessment Clearing and Snagging Operations U.S. Army Corps of Engineers Wilmington District

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1.00 PURPOSE AND NEED

This environmental assessment (EA) addresses impacts associated with clearing and snagging operations performed by the Wilmington District, U.S. Army Corps of Engineers within the authorized navigation channels North Carolina. The need for the proposed activity, as established, is to provide safe, hazard free federal navigation channels within the Wilmington District in an efficient, environmentally acceptable manner. An integral part of the proposed activity is the discussion of enhancement of aquatic and estuarine habitats through appropriate placement of woody debris to construct anchored in-stream fish cover.

2.00 INTRODUCTION

2.01 Current Program. The clearing and snagging of debris performed within the federal navigation channels of the Wilmington District is an integral part of District Operations. The removal of debris within federal channels has been on-going since as early as 1922 (Cape Fear River). Work was accomplished by private contractors or by government vessel using available equipment. In 1967, the need for a specialized vessel with the proper equipment on board that could safely remove the snags and debris from the waterways in a safe, efficient manner was recognized. On 18 December 1967, the government-owned Debris Boat SNELL was brought into action and has been operating since that time to remove potential hazards to navigation. Snagging duties included clearing riverbanks of unstable or dying trees likely to fall into the waterway, retrieving those that have already fallen, and removing debris that has accumulated in the water and obstructs traffic (including large woody debris, and log jams, etc.). The SNELL has also been called upon to remove obstacles such as boats, cars, and airplanes. In perspective, by 1984, clearing and snagging constituted only half of the SNELL's work. Her other tasks include: 1) pile driving; subaqueous boring and probing; 2) building retaining walls, mooring dolphins, and piers; 3) maintaining dredging and navigation ranges, waterway signs and mileposts; and 4) repairing fender systems and guide walls.

Today the majority of clearing and snagging within the Wilmington District is performed by the SNELL; however, future work may also be performed by private contractors if the work can be performed in a safe and efficient manner, or by other government-owned vessels such as small skiffs or crew boats that can work in smaller, shallower channels.

2.02 Authorized Projects. The clearing and snagging of debris, which poses a threat to navigation, is authorized as operation and maintenance of the federal channel. The authorization and description of each of the federal projects, listed below, is provided in Appendix A.

- Atlantic Intracoastal Waterway (AIWW)
- Cape Fear River below Fayetteville
- Cashie River below Windsor
- Chowan River below Winton
- Lockwoods Folly River
- Neuse River
- New River below Jacksonville
- Pamlico and Tar Rivers below Greenville
- Roanoke River below NC 11 Bridge
- Shallotte River
- Trent River below Trenton

2.03 Memorandum of Understanding Between the U.S. Coast Guard and the U.S. Army Corps of Engineers. In accordance with the January 2001 Memorandum of Understanding between the U.S. Army Corps of Engineers, Wilmington District, the U.S. Coast Guard Marine Safety Office, Wilmington and the U.S. Coast Guard Group, Fort Macon, the District has the responsibility for identifying and removing floating debris within the Wilmington District navigable waters (reference Appendix B).

2.04 Operations. Snags, floating, leaning and/or overhanging trees, logjams, and other debris are removed using a crane arm and grapple (claw) to secure and hoist the debris to the deck of the vessel. No channel excavation work (i.e., removal of sediments) is associated with the work. Debris has been historically placed on the adjacent upland areas in an attempt to remove the debris from the system to avoid the debris from re-floating into the channels. Debris within the authorized waterway is removed and best judgment, by the Captain, is used to determine the need to remove debris adjacent to the channel. The amount of work performed within a given channel is subject to need. Requests to remove snags may be made by local authorities through contacting the State of North Carolina, or the U.S. Coast Guard. Removal of debris on a routine basis usually requires 1 to 3 days to complete. However, additional time may be required to remove debris after periods of high rainfall, flooding, and/or severe storms.

2.05 Timing of Work. Work is performed within the Wilmington District on an as needed basis to maintain and assure safe navigation within a federally authorized channel. The removal of snags and debris is viewed as short duration work and produces a deminimus amount of sediment disturbed within a given channel; therefore, no seasonal restrictions exist for the clearing and snagging activity.

3.00 PUBLIC AND AGENCY CONCERNS

Several basic concerns were brought out during the scoping process including: 1) the removal of leaning or overhanging trees and the removal or cutting of embedded trees; 2) commercial usage of a given channel; 3) timing of work to avoid impacts to aquatic, fishery, and terrestrial resources; 4) disposal methods; 5) endangered and threatened species impacts; and 6) coordination/notification of work. Every effort has been made to address the issues raised during the scoping process. Correspondence received during the scoping process is included in Appendix C.

4.00 ALTERNATIVES

This section presents the alternatives and the environmental impacts associated with each alternative. The evaluation is based on information contained in Section 5.0 Affected Environment, and Section 6.0 Environmental Effects.

4.01 No Action. The No Action alternative involves not clearing and snagging the federal navigation projects in Wilmington District. The No Action Alternative is unacceptable because debris could become a hazard to the safe navigation of federal project areas by both commercial and non-commercial interests alike. Increased amounts of woody material in waterways as a result of the No Action Alternative could also slow drainage of upstream areas during high rainfall events, potentially increasing the risk of flooding in those areas.

The No Action Alternative would not satisfy the purpose and need of the projects. Without the ability to remove debris and hazards to navigation from navigation channels, the Corps would not be able to fulfill its mission of providing safe navigable waterways for the use of commercial and recreational interests.

4.02 Continuation of Current Program. The current program includes the removal of overhanging or leaning trees still embedded in the embankment or the trimming and cutting of leaning trees as a precautionary measure to minimize debris floating out into the authorized channel within a short period of time. The current program also includes the placement of debris on private, commercial and/or conservation lands, which requires obtaining written easements/permission. The current program does not have procedural guidelines in place for notification of work to be performed within a given channel. The current program would provide for navigation interests, but would continue to remove habitat structure from the rivers and estuarine areas without any Best Management Practice (BMP) for return of this material to the aquatic system where appropriate and feasible. Although the continuation of the current program generally meets the purpose and need of the activity, it is recognized that work can be performed in a best management manner that meets the goals and objectives (operation and maintenance of federally authorized channels) as well as enhance the environment through the creation of fishery habitat. Therefore, continuation of the current program without modifications is not proposed.

4.03 Modified Clearing and Snagging Operations (Preferred Plan). The preferred plan is the continuation of clearing and snagging operations within the Wilmington District federal navigation channels in an environmentally acceptable manner that meets navigation and safety requirements. The basic concept of work would continue in the manner described in 2.00 above with the exception of the following:

- a. Overhanging or leaning trees, or embedded debris outside the federal navigation channel limits would not be cut or removed unless determined by the Wilmington District or the U.S. Coast Guard to pose an imminent threat or hazard to navigation.
 - b. Woody debris removed from the channels would be used to construct habitat enhancement structures or be removed from the site and transported to an upland disposal site or landfill. Placement of all debris would be coordinated with the appropriate property owners. Placement of fishery enhancement structures, including anchoring of the structures would be coordinated and approvals obtained from the State of North Carolina along with all necessary easements.
 - c. No work would be performed without the proper authorization being obtained from the Wilmington District or the U.S. Coast Guard in accordance with the MOU.
 - d. Notification of work would be provided through the Wilmington District website at <http://www.saw.usace.army.mil> and/or by e-mail to interested parties requesting notification.
- **Habitat Enhancement.** The proposed habitat enhancement structures described above involve using large woody debris, both existing and that to be removed during future operations, to construct anchored in-stream fish cover in areas of low flow. A variety of locations and cover structures would be examined for potential use. The most likely anchoring options include the cabling of downed trees to shoreline anchors or using the debris to create crib structures. Anchoring would be sufficient to assure that snags do not reenter the channel during flood flow conditions. Such measures would provide additional in-stream cover for juvenile fishes and provide resting areas for migrating anadromous fishes.

As described in The Incremental Effects of Large Woody Debris Removal on Physical Aquatic Habitat (WES 1992), the importance of woody debris as cover for warm water fishes is well documented (Angermeier and Kerr 1984, Harmon et al. 1986; Hickman 1975; Hurtle and Lake 1983; Sedell, Swanson, and Gregory 1985). This in-stream structure creates and maintains pools, and also provides protection from current, thereby concentrating food and creating protected foraging sites for fish feeding on drifting food items. Large woody debris also provides valuable shelter during episodes of high flow (Bisson et al. 1987). This structure is also expected to provide protection from aquatic or terrestrial predators. Invertebrates that colonize the surface of large woody debris are important fish food resources. In sandy streams of the southern United States debris may support a significant portion of the invertebrates eaten by warm water fishes (Angermeier

and Kerr 1984, Benke et al. 1985). Hickman (1975) assessed the population responses of selected warm water species to the availability of cover in a Missouri Stream and found that the population of catchable fish was 51 percent lower at stations without snags than those with large woody debris. It is expected that introduction of significant quantities of large woody debris could double the number of catchable fish within the treatment areas.

- **Implementation.** The full details of implementing the enhancement features along a given waterway would require coordination and possible funding requirements to be worked out among the resource agencies involved (i.e., the U.S. Fish and Wildlife Service, the North Carolina Wildlife Resources Commission, the Nature Conservancy, the State of North Carolina, local sponsors, etc.). Where found to be feasible, this enhancement feature would be incorporated into future clearing and snagging activities addressed within this EA.

5.00 AFFECTED ENVIRONMENT

This section describes the existing environment of the areas that have the potential to be affected by the implementation of the proposed action. Background information has been obtained during coordination meetings, literature searches, in-house meetings with District personnel, as well as comments received in response to the Wilmington District scoping letter dated July 31, 2003.

5.01 Water Quality. The proposed project actions occur in the coastal plain region of North Carolina. The project areas are predominantly tributary to the sounds of North Carolina or the Atlantic Ocean. The North Carolina Department of Environment and Natural Resources (NCDENR) assigns classifications to the waters of the state. The water quality classifications for the proposed action areas are listed in Table 5-1.

Table 5-1. Project Area Water Quality Classifications

Proposed Project Area	Water Quality Classification*
Atlantic Intracoastal Waterway (AIWW)	SA, ORW, SA, NSW, SB, SC, SW, SC, NSW
Cape Fear River below Fayetteville	C, WS-IV, WS-V, WS-IV CA, C SW, SC, SA
Cashie River below Windsor	B, SW, C, SW
Chowan River below Winton	B, NSW
Lockwoods Folly River	SA, SC, HQW
Neuse River	SA, NSW, SB, SW, NSW, SC, SW, NSW, C, SW, NSW
New River below Jacksonville	SA, SC NSW, SC, HQW, NSW
Pamlico and Tar Rivers below Greenville	SA, SA, NSW, SB, NSW, SC, NSW, C, NSW, B, NSW
Roanoke River below NC 11 Bridge	C, SW, C
Shalotte River	SA, SC HQW
Trent River below Trenton	SA, SC, SW, NSW

*Definitions are from 15A NCAC 2B .0300 dated October 22, 1992. Water quality classifications are defined as:

Fresh Water:

WS-IV: Waters protected as water supplies, which are generally in moderately to highly developed watersheds.

WS-V: Waters protected as water supplies, which are generally upstream and draining to Class WS-IV waters.

B: Primary recreation and any other usage specified by the "C" classification;

C: Aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture.

Tidal Salt Waters:

SA: shellfishing for market purposes and any other usage specified by the "SB" and "SC" classification;

SB: Primary recreation and any other usage specified by the "SC" classification;

SC: Aquatic life propagation and survival, fishing, wildlife, and secondary recreation.

Supplemental Classifications:

SW: Swamp Waters; waters which have low velocities and other natural characteristics.

Supplemental Surface Water Classifications

NSW: Nutrient Sensitive Waters; waters which require limitations on nutrient inputs;

HQW: High Quality Waters; waters that are rated as excellent based on biological and physical/chemical characteristics.

ORW: Outstanding Resource Waters; waters which are unique and special waters of exceptional state or national recreational or ecological significance.

Specific water intakes for the City of Wilmington, Lower Cape Fear Water and Sewer Authority and International Paper Company at Rieglewood are in the vicinity of the Cape Fear River Lock and Dam No. 1. Caution continues to be exercised in this area to avoid impacts to submerged discharge piping and bank related structures.

5.02 Wetlands and Floodplains. Wetland areas and floodplains are adjacent to the proposed action areas. Wetlands are those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands possess three essential characteristics: hydrophytic vegetation, hydric soils, and wetland hydrology. The embankments along the authorized waterways consist of bottomland forest, mudflats, tidal marshes, early and late succession of forest vegetation as well as backswamp and other wetland areas. Typical floodplain vegetation communities include grasses, shrubs, small trees, and canopy trees. The vegetation found along the waterways provides shade and cover for wildlife resources common to these areas.

The proposed action includes the removal of vegetation consisting of woody debris that is dead or down within a channel. The removal of live plant material may occur only when trees are identified as leaning over the navigation channel to the extent that they have become a hazard, or imminent hazard, to navigation.

5.03 Fishery Resources. Common fish species found in the coastal rivers and estuaries of North Carolina include flounder (*Paralichthys spp.*), spot (*Leiostomus xanthurus*), croaker (*Micropogonius undulates*), weakfish (*Cynoscion regalis*), bluefish (*Pomatomus saltatrix*), and black sea bass (*Centropistes striata*). Inland river portions of the project areas also provide important habitat and spawning areas for the following anadromous species: striped bass (*Morone saxatilis*), American (*Alosa sapidissima*) and hickory (*A. mediocris*) shads as well as alewife (*A. pseudoharengus*) and blueback herring (*A. aestivalis*). The highest peak timeframe for anadromous fish spawning is between March 15 and June 1. In addition to finfish, the rivers and estuaries provide habitat for the following shellfish species: blue crab (*Callinectes sapidus*), shrimp (*Penaeus spp.*), hard clams (*Mercenaria mercinaria*), and American Oyster (*Crassostrea virginica*) (USMC, 1999). The estuaries provide habitat to species that complete their life cycles offshore in the Atlantic Ocean and to species that are resident their entire lives.

Portions of the proposed project areas are designated as Primary Nursery Area (PNA) by the North Carolina Division of Marine Fisheries. PNAs are located in the upper portions of creeks and bays. These areas are usually shallow with soft muddy bottoms and surrounded by marshes and other wetlands. Low salinities and the abundance of food make these areas ideal for young fish and shellfish. To protect juveniles, many commercial fishing activities are prohibited in these waters; including the use of trawl nets, seine nets, dredges or any mechanical methods used for taking clams or oysters. Primary Nursery Areas have been designated adjacent to portions of the AIWW, the upper portion of New River, the Cape Fear River upstream of Wilmington, and the Lockwoods Folly River upstream of its confluence with the AIWW.

5.04 Wildlife. A diversity of wildlife would be expected to be found along the project areas. Bird species such as wood ducks, barred owls, great blue herons, and the bald eagle would be expected to be seen throughout the areas as well as neotropical migrants. Mammals such as the black bear, white tailed deer, and bobcat could be found within the nearby hardwood forests along with numerous small game species.

5.05 Endangered and Threatened Species. Federally listed endangered and threatened species with the potential to occur in the Proposed Project Areas are listed in Table 5-2.

Table 5-2. List of Protected Species With the Potential to Occur in the Project Areas

Common Name	Scientific Name	Federal Status	North Carolina Status
West Indian Manatee	<i>Trichechus manatus</i>	Endangered	Endangered
Shortnose Sturgeon	<i>Acipenser brevirostrum</i>	Endangered	Endangered
Bald eagle	<i>Haliaeetus leucocephalus</i>	Threatened	Threatened
Pondberry	<i>Lindera melissifolia</i>	Endangered	Endangered
Alligator	<i>Alligator mississippiensis</i>	Threatened (Similarity of Appearance)	Threatened

Note: This list was compiled from response received from the U.S. Fish and Wildlife Service (USFWS) during the scoping process, as well as information provided by the USFWS and National Marine Fisheries Service (NMFS) website. Coordination between the Wilmington District, the USFWS and NMFS is on-going during the preparation of the EA.

5.06 Cultural Resources. Investigation for historic and archaeological resources in the proposed project areas would be conducted pursuant to Section 106 of the National Historic Preservation Act of 1966 as amended (16 U.S.C. §§470 *et seq.*), the Secretary of the Interior's Standards and Guidelines (48 F.R. 44720-23), and the Abandoned Shipwreck Act of 1987 as amended. The Underwater Archaeology Branch of the North Carolina Department of Cultural Resources, State Historic Preservation Office (NCSHPO) indicated that important submerged cultural resources may be affected by clearing and snagging operations. This conclusion is based on historical research indicating that remains of ships and other cultural materials lie within the submerged waters of North Carolina (Scoping letter dated August 28, 2003, Appendix C).

6.00 ENVIRONMENTAL EFFECTS

The following sections discuss the environmental effects of the proposed action. The proposed action modifies the current program with added enhancement features and consideration of environmental resources within the area. The proposed action includes the use of the best management plan to remove hazards to navigation in an environmental sound manner and the use of debris to create enhancement features within a given project area.

6.01 Water Quality. Implementation of the proposed action would not have adverse effects on water quality in the subject federal navigation channels. Removal of materials from the navigation channel may result in transient, minor increases in turbidity due to movement of the material, but the duration of the increases would be short. Minor turbidity changes could also occur during placement of the habitat enhancement structures, however, turbidity levels are not expected to exceed state water quality standards. These turbidity increases would be the result of minimal sediment disturbance related to anchoring of woody material to prevent movement back into the federal navigation channel. Effects of the placement of materials would be conditioned by factors such as size and amount of material in a location, and the flow regime at that point on the waterway. With appropriate placement and anchoring of woody debris, it is expected that there would be no adverse effects to water quality as a result of the removal of woody debris as described in the proposed action, including the construction of habitat enhancement structures along the channels.

6.02 Wetlands and Floodplains. Impacts to wetland and floodplain areas as a result of the proposed action would be minimal. The proposed action would only remove floating debris in the navigation channel and only leaning trees that directly block the navigation channel. In addition, woody debris would be placed in the aquatic environment, if feasible, as habitat enhancement structures. There are no expected adverse effects to wetland and/or floodplain areas due to implementation of the proposed action.

6.03 Fishery Resources. The proposed action would have minor short-term effects on mobile species. There are unavoidable adverse impacts to species that are attached to debris material removed during clearing and snagging. Habitat structure and diversity are reduced, which have been shown to reduce species diversity (Marzolf, 1978). Clearing and snagging operations proposed would remove only moderate amounts of material from navigation channels on an intermittent basis, so the effects of these actions on fish and wildlife resources are considered to be minimal.

The proposed action would have temporary short-term effects on mobile species during movement and placement of woody debris in areas selected for habitat enhancement. Non-mobile species may suffer some mortality due to detachment from materials during movement and anchorage to prevent movement back into the adjacent channel.

Placement of large woody debris materials as fisheries habitat enhancements would be coordinated with the North Carolina Division of Marine Fisheries, North Carolina Wildlife Resources Commission, U.S. Fish and Wildlife Service, National Marine Fisheries Service and

other and other appropriate agencies. Placement of woody debris in this manner would lead to a long-term increase in the amount of habitat in the aquatic system.

6.04 Essential Fish Habitat. The 1996 Congressional amendments to the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) (PL 94-265) set forth new requirements for the National Marine Fisheries Service (NMFS), Regional Fishery Management Councils (FMCs), and other federal agencies to identify and protect important marine and anadromous fish habitat. These amendments established procedures for the identification of Essential Fish Habitat (EFH) and a requirement for interagency coordination to further the conservation of federally managed fisheries. The project area may include species that are managed by, or are of particular interest to the Mid-Atlantic and South Atlantic Fishery Management Councils, as well as the Atlantic States Marine Fisheries Commission. The NMFS Southeast Region is the point of contact (POC) for EFH coordination for this project. This assessment will be coordinated with the NMFS Southeast Region. Table 6-1 lists by life stages, species that may occur in project areas and are managed under MSFCMA. These fish species and habitats require special consideration to promote their viability and sustainability. The potential impacts of the proposed actions on these fish and habitats are discussed the following paragraphs.

Impacts on Managed Species. During clearing and snagging operations unavoidable sediment disturbance may result in a temporary increase in turbidity in the immediate area of work – during removal of debris and placement of materials in out-of-channel areas. The turbidity caused during removal is not expected to adversely effect managed fish species (Table 6-1). The removal of debris material (snags, trees, limbs, log jams) is not expected to adversely effect managed fish species. Only debris, which may obstruct navigation, are removed and other materials are left in place. Where feasible, the large woody debris material would be returned to the river as habitat enhancement structures.

Impacts on Essential Fish Habitats. The Fishery Management Plan Amendments of the South Atlantic Fishery Management Council identify a number of categories of Essential Fish Habitat (EFH) and Habitat Areas of Particular Concern (HAPC), which are listed in Table 6-2. While all 26 of these habitat categories occur in waters of the southeastern United States, many are absent from the project vicinity. This proposed action will not impact marine (ocean) areas. Table 6-3 summarizes the EFH and HPAC believed to be present in the project area and the potential impacts of the proposed action on those habitats. Impacts on habitat categories potentially present in the project vicinity are also discussed below. They include the estuarine areas: estuarine emergent wetlands, seagrass (submerged aquatic vegetation), oyster reefs and shellbanks, intertidal flats, palustrine emergent and forested wetlands, aquatic beds, estuarine water column, and state-designated areas of importance for managed species (primary nursery areas). No marine areas are included in the project vicinity.

Table 6-1. Essential Fish Habitat (EFH) Species for Coastal North Carolina.¹

MANAGEMENT PLAN AGENCY ²	MANAGEMENT PLAN SPECIES GROUP	COMMON NAME OF SPECIES	SCIENTIFIC NAME OF SPECIES	EFH for LIFE STAGES BY ECOSYSTEM ³
				Estuarine
SAFMC	Calico Scallop	Calico scallop	<i>Argopecten gibbus</i>	
SAFMC	Coastal Migratory Pelagics	Cobia	<i>Rachycentron canadum</i>	L P J A
SAFMC	Coastal Migratory Pelagics	Dolphin	<i>Coryphaena hippurus</i>	
SAFMC	Coastal Migratory Pelagics	King mackerel	<i>Scomberomorus cavalla</i>	
SAFMC	Coastal Migratory Pelagics	Spanish mackerel	<i>Scomberomorus maculatus</i>	J
SAFMC	Coral & Coral Reef	Corals	100s of species	
SAFMC	Golden Crab	Golden crab	<i>Chaceon fenerri</i>	
SAFMC	Red Drum	Red drum	<i>Sciaenops ocellatus</i>	P J S A
SAFMC	Shrimp	Brown shrimp	<i>Farfantepenaeus aztecus</i>	P J S
SAFMC	Shrimp	Pink shrimp	<i>Farfantepenaeus duorarum</i>	P J S
SAFMC	Shrimp	Rock shrimp	<i>Sicyonia brevirostris</i>	
SAFMC	Shrimp	Royal red shrimp	<i>Pleoticus robustus</i>	
SAFMC	Shrimp	White shrimp	<i>Litopenaeus setiferus</i>	P J S
SAFMC	Snapper Grouper	Blackfin snapper	<i>Lutjanus buccanella</i>	
SAFMC	Snapper Grouper	Blueline tilefish	<i>Caulolatilus microps</i>	
SAFMC	Snapper Grouper	Golden tilefish	<i>Lopholatilus chamaeleonticeps</i>	
SAFMC	Snapper Grouper	Gray snapper	<i>Lutjanus griseus</i>	P J A
SAFMC	Snapper Grouper	Greater amberjack	<i>Seriola dumerili</i>	
SAFMC	Snapper Grouper	Jewfish	<i>Epinephelus itajara</i>	Florida only
SAFMC	Snapper Grouper	Mutton snapper	<i>Lutjanus analis</i>	Florida only
SAFMC	Snapper Grouper	Red porgy	<i>Pagrus pagrus</i>	
SAFMC	Snapper Grouper	Red snapper	<i>Lutjanus campechanus</i>	
SAFMC	Snapper Grouper	Scamp	<i>Mycteroperca phenax</i>	
SAFMC	Snapper Grouper	Silk snapper	<i>Lutjanus vivanus</i>	
SAFMC	Snapper Grouper	Snowy grouper	<i>Epinephelus niveatus</i>	
SAFMC	Snapper Grouper	Speckled hind	<i>Epinephelus drummondhayi</i>	
SAFMC	Snapper Grouper	Vermillion snapper	<i>Rhombopites aurorubens</i>	
SAFMC	Snapper Grouper	Warsaw grouper	<i>Epinephelus nigritus</i>	
SAFMC	Snapper Grouper	White grunt	<i>Haemulon plumieri</i>	
SAFMC	Snapper Grouper	Wreckfish	<i>Polyprius americanus</i>	
SAFMC	Snapper Grouper	Yellowedge grouper	<i>Epinephelus flavolimbatus</i>	
SAFMC	Spiny Lobster	Spiny Lobster	<i>Panulirus argus</i>	L J A
MAFMC	Atlantic Mackerel, Squid, Butterfish	Atlantic butterfish	<i>Pepilus triacanthus</i>	
MAFMC	Atlantic Mackerel, Squid, Butterfish	Atlantic mackerel	<i>Scomber scombrus</i>	
MAFMC	Atlantic Mackerel, Squid, Butterfish	Long finned squid	<i>Loligo pealei</i>	
MAFMC	Atlantic Mackerel, Squid, Butterfish	Short finned squid	<i>Illex illecebrosus</i>	
MAFMC	Atlantic Surfclam & Ocean Quahog	Ocean quahog	<i>Arctica islandica</i>	
MAFMC	Atlantic Surfclam & Ocean Quahog	Surfclam	<i>Spisula solidissima</i>	
MAFMC	Bluefish	Bluefish	<i>Pomatomus saltatrix</i>	J A
MAFMC	Spiny Dogfish	Spiny dogfish	<i>Squalus acanthias</i>	
MAFMC	Summer Flounder, Scup, Black Sea Bass	Black sea bass	<i>Centropristis striata</i>	
MAFMC	Summer Flounder, Scup, Black Sea Bass	Scup	<i>Stenotomus chrysops</i>	
MAFMC	Summer Flounder, Scup, Black Sea Bass	Summer flounder	<i>Paralichthys dentatus</i>	L J A
NMFS	Billfish	Blue marlin	<i>Makaira nigricans</i>	
NMFS	Billfish	Longbill spearfish	<i>Tetrapturus pfluegeri</i>	
NMFS	Billfish	Sailfish	<i>Istiophorus platypterus</i>	
NMFS	Billfish	White marlin	<i>Tetrapturus albidus</i>	
NMFS	Sharks	Atlantic angel shark	<i>Squatina dumeril</i>	
NMFS	Sharks	Atlantic sharpnose shark	<i>Rhizoprionodon terraenovae</i>	J
NMFS	Sharks	Basking shark	<i>Cetorhinus maximus</i>	
NMFS	Sharks	Big nose shark	<i>Carcharhinus altimus</i>	
NMFS	Sharks	Bigeye sand tiger shark	<i>Odontaspis noronhai</i>	
NMFS	Sharks	Bigeye sixgill shark	<i>Hexanchus vitulus</i>	
NMFS	Sharks	Bigeye thresher shark	<i>Alopias superciliosus</i>	
NMFS	Sharks	Blacknose shark	<i>Carcharhinus acronotus</i>	
NMFS	Sharks	Blacktip shark	<i>Carcharhinus limbatus</i>	
NMFS	Sharks	Blue shark	<i>Prionace glauca</i>	

Continued

Table 6-1 (Continued). Essential Fish Habitat (EFH) Species for Coastal North Carolina.¹

MANAGEMENT PLAN AGENCY ²	MANAGEMENT PLAN SPECIES GROUP	COMMON NAME OF SPECIES	SCIENTIFIC NAME OF SPECIES	EFH for LIFE STAGES BY ECOSYSTEM ³
				Estuarine
NMFS	Sharks	Bonnethead	<i>Sphyrna tiburo</i>	J A
NMFS	Sharks	Bull shark	<i>Carcharhinus leucas</i>	J
NMFS	Sharks	Caribbean reef shark	<i>Carcharhinus perezi</i>	
NMFS	Sharks	Caribbean sharpnose shark	<i>Rhizoprionodon porosus</i>	
NMFS	Sharks	Dusky shark	<i>Carcharhinus obscurus</i>	J A
NMFS	Sharks	Finetooth shark	<i>Carcharhinus isodon</i>	
NMFS	Sharks	Galapagos shark	<i>Carcharhinus galapagensis</i>	
NMFS	Sharks	Great hammerhead	<i>Sphyrna mokarran</i>	
NMFS	Sharks	Lemon shark	<i>Negaprion brevirostris</i>	J A
NMFS	Sharks	Longfin mako shark	<i>Isurus paucus</i>	
NMFS	Sharks	Narrowtooth shark	<i>Carcharhinus brachyurus</i>	
NMFS	Sharks	Night shark	<i>Carcharhinus signatus</i>	
NMFS	Sharks	Nurse shark	<i>Ginglymostoma cirratum</i>	
NMFS	Sharks	Oceanic whitetip shark	<i>Carcharhinus longimanus</i>	
NMFS	Sharks	Porbeagle shark	<i>Lamna nasus</i>	
NMFS	Sharks	Sand tiger shark	<i>Odontaspis taurus</i>	
NMFS	Sharks	Sandbar shark	<i>Carcharhinus plumbeus</i>	J A
NMFS	Sharks	Scalloped hammerhead	<i>Sphyrna lewini</i>	
NMFS	Sharks	Sharpnose sevengill shark	<i>Hepranchias perlo</i>	
NMFS	Sharks	Shortfin mako shark	<i>Isurus oxyrinchus</i>	
NMFS	Sharks	Silky shark	<i>Carcharhinus falciformis</i>	
NMFS	Sharks	Sixgill shark	<i>Hexanchus griseus</i>	
NMFS	Sharks	Smalltail shark	<i>Carcharhinus porosus</i>	
NMFS	Sharks	Smooth hammerhead	<i>Sphyrna zygaena</i>	
NMFS	Sharks	Spinner shark	<i>Carcharhinus brevipinna</i>	
NMFS	Sharks	Thresher shark, common	<i>Alopias vulpinus</i>	
NMFS	Sharks	Tiger shark	<i>Galeocerdo cuvieri</i>	
NMFS	Sharks	Whale shark	<i>Rhincodon typus</i>	
NMFS	Sharks	White shark	<i>Carcharodon carcharias</i>	
NMFS	Swordfish	Swordfish	<i>Xiphias gladius</i>	
NMFS	Tuna	Albacore	<i>Thunnus alalunga</i>	
NMFS	Tuna	Atlantic bigeye tuna	<i>Thunnus obesus</i>	
NMFS	Tuna	Atlantic Yellowfin tuna	<i>Thunnus albacares</i>	
NMFS	Tuna	Skipjack tuna	<i>Katsuwonus pelamis</i>	
NMFS	Tuna	Western Atlantic bluefin tuna	<i>Thunnus thynnus</i>	

Note: 1. These Essential Fish Habitat species were compiled from **Essential Fish Habitat: A Marine Fish Habitat Conservation Mandate for Federal Agencies**, February 1999 (Revised 10/2001) (Appendices 2, 3, 6, 7, and 8).

Although 49 species are listed in Appendix 3 under National Marine Fisheries Service management, only 35 of these species have EFH listed in Appendix 8.

2. Organizations responsible for Fishery Management Plans include: **SAFMC** = South Atlantic Fishery Management Council; **MAFMC** = Mid-Atlantic Fishery Management Council; **NMFS** = National Marine Fisheries Service.

3. Life stages include: E = Eggs, L = Larvae, P = PostLarvae, J = Juveniles, S = SubAdults, A = Adults

(Note: Only Estuarine areas affected by proposed actions)

Table 6-2: Categories of Essential Fish Habitat and Habitat Areas of Particular Concern in Southeast United States.¹

ESSENTIAL FISH HABITAT	GEOGRAPHICALLY DEFINED HABITAT AREAS OF PARTICULAR CONCERN
Estuarine Areas	Area – Wide
Aquatic Beds	Council-designated Artificial Reef Special Management Zones
Estuarine Emergent Wetlands	Hermatypic (reef-forming) Coral Habitat & Reefs
Estuarine Scrub / Shrub Mangroves	Hard Bottoms
Estuarine Water Column	Hoyt Hills
Intertidal Flats	<i>Sargassum</i> Habitat
Oyster Reefs & Shell Banks	State-designated Areas of Importance of Managed Species (Primary Nursery Areas)
Palustrine Emergent & Forested Wetlands	Submerged Aquatic Vegetation
Seagrass	
Marine Areas	North Carolina
Artificial / Manmade Reefs	Big Rock
Coral & Coral Reefs	Bogue Sound
Live / Hard Bottoms	Capes Fear, Lookout, & Hatteras (sandy shoals)
<i>Sargassum</i>	New River
Water Column	The Ten Fathom Ledge
	The Point

¹Areas reported are identified in Fishery Management Plan Amendments of the South Atlantic Fishery Management Council and are included in Essential Fish Habitat: New Marine Fish Habitat Mandate for Federal Agencies. February 1999. (Tables 6 and 7)

Table 6-3. Summary of Potential Impacts to Essential Fish Habitat (EFH) and Habitat Areas of Particular Concern (HAPC)

EFH

Estuarine Areas	POTENTIAL PRESENCE Project Areas See Appendix A	POTENTIAL IMPACTS Clearing and Snagging Operations
1. Aquatic Beds	YES	NS
2. Estuarine Emergent Wetlands	YES	NS
3. Estuarine Shrub/Scrub Mangroves	NO	NP
4. Estuarine Water Column	YES	NS
5. Intertidal Flats	YES	NS
6. Oyster Reefs and Shell Banks	YES	NS
7. Palustrine Emergent and Forested Wetlands	YES	NS
8. Seagrass	YES	NS

Marine Areas

9. Artificial Manmade Reefs	NO	NP
10. Coral & Coral Reefs	NO	NP
11. Live / Hard Bottoms	NO	NP
12. Sargassum	NO	NP
13. Water Column including Surf Zone	NO	NP

HAPC

Area-Wide

14. Council-designated Artificial Reef Special Management Zones	NO	NP
15. Hermatypic Coral Habitat & Reefs	NO	NP
16. Hard Bottoms	NO	NP
17. Hoyt Hills	NO	NP
18. Sargassum Habitat	NO	NP
19. State-designated Areas Important for Managed Species	YES	NS
20. Submerged Aquatic Vegetation	YES	NS

North Carolina

21. Big Rock	NO	NP
22. Bogue Sound	YES	NS
23. Cape Fear, Lookout, & Hatteras (sandy shoals)	NO	NP
24. New River	YES	NS
25. Ten Fathom Ledge	NO	NP
26. The Point	NO	NP

Note:

Legend:

Resource Presence / Impact Assessment

NP	Not Present / No impacts
PS	Present / Potentially Significant Impact
S	Present / Significant Impact
NS	Present OR Potentially Present / No significant impacts
NO	NOT PRESENT IN PROJECT AREA
YES	Present OR Potentially Present in Project Area

Estuarine Emergent Wetlands. Estuarine emergent wetlands are characterized by erect, rooted, herbaceous plants that are predominantly perennial and, in the project vicinity, are represented by salt marsh communities that are dominated by smooth cordgrass (*Spartina alterniflora*) and saltmeadow cordgrass (*Spartina patens*). These extremely valuable communities occur in several areas included in the project area. An example of an important food source for many fish and shellfish species is a wetland. Wetlands offer a great food supply for fish because wetland plants grow rapidly and support a variety of animals. Some fish eat the wetland plants themselves and other fish eat small insects and crustaceans that live on wetland plants.

These vegetated areas are located outside the navigation channels, so they will not be directly affected by debris removal. Removed debris would not be placed in estuarine emergent habitats. The proposed action is not expected to significantly impact estuarine emergent wetlands.

Submerged Aquatic Vegetation. Coastal sounds and estuaries of North Carolina have extensive beds of submerged aquatic vegetation (SAV), also known as seagrass when occurring in saline waters of estuarine/marine environments. The predominant plant species in this community is eelgrass (*Zostera marina*), while some widgeongrass (*Ruppia maritima*) and shoalgrass (*Halodule wrightii*) may also be present. These seagrass beds provide excellent habitat for a variety of commercially and ecologically important estuarine species, especially fishes and crustaceans, by reducing current velocities, providing attachment surfaces for organisms, and providing refuge and food sources.

SAVs occur in open and shallow-water areas. Clearing and snagging operations in SAV areas would be infrequent if at all. When work does occur it would likely involve removal of debris from navigation channels that pass through SAV areas and not the SAV areas themselves. Debris firmly grounded in shallows is not a navigation hazard and will not be removed. Accordingly, physical damage to the SAVs from clearing and snagging is expected to be minor.

The second potential impact of the proposed action is increased turbidity, which could impede light penetration and adversely impact SAV. Any turbidity increases would be short-term and turbidity impacts on SAV are expected to be negligible.

Estuarine Water Column. The potential water quality impacts of clearing and snagging operations are addressed in Section 6.01. During clearing and snagging operations unavoidable sediment disturbance may result in a temporary increase in turbidity in the immediate area work – during removal of debris and placement of materials in out-of-channel areas. These turbidity events during removal are not expected adversely impact estuarine water column in the immediate vicinity of the activity, potentially affecting estuarine fish and adjacent habitat. Overall water quality impacts of the proposed action are expected to be short-term and minor. Living estuarine resources dependent upon good water quality are not expected to experience significant adverse impacts due to water quality changes.

Aquatic Beds. Aquatic beds (defined as assemblages of submerged rooted vascular vegetation found in tidal freshwater areas) may be found adjacent to the federal navigation channels in the project area. The proposed action includes the removal of vegetation consisting of woody debris

that is dead or down within a channel and a hazard to navigation. Work in the shallow aquatic beds is will be minimal if at all. When work does occur it would likely involve removal of debris from navigation channels that pass through aquatic beds and not in the beds themselves. Debris firmly grounded or embedded in shallows is not a navigation hazard and will not be removed. Accordingly, physical damage to the aquatic beds from clearing and snagging is expected to be minor

Intertidal Flats. Intertidal flats may occur in the project vicinity, but they do not occur within the authorized navigation channels. They may be adjacent to the channels. No direct impacts to intertidal flats are expected from clearing and snagging operations.

Palustrine Emergent and Forested Wetlands. Palustrine emergent and forested wetlands are extensive in the project area. Riparian habitat provides important water quality and refuge factors for adult and juvenile fish. Wetlands and riparian vegetation are also important in maintaining good water quality. Wetlands act as filters by removing harmful pollutants and excess nutrients. Riparian vegetation helps filter out pollutants, slows down runoff, reduces streambank erosion, and provides shade to streams. Shade is essential to keep water temperature down, which in turn keeps dissolved oxygen levels up. Adult and juvenile fish utilizing freshwater streams seek protection in riparian areas from floods, low flow conditions, and predators. They depend on instream vegetation, off-channel habitat, large woody debris, and riparian cover for protection. Juvenile fish are especially susceptible to predation and adverse environmental conditions. Fallen trees and logs in streams and estuaries provide refuge from predators and from the stream's current. "Large woody debris" (LWD) also contributes nutrients to the stream, nurtures insects, and contributes structure to the streambed.

The proposed action includes the removal of vegetation consisting of woody debris that is dead or down within a channel. The removal of live plant material may occur only when trees are identified as leaning over the navigation channel to the extent that they have become a hazard, or imminent hazard, to navigation. Only a portion of the woody material present in the system would be removed. The estimated proportion of removed to remaining woody material is small.

The removal of large woody debris would affect small discreet areas of habitat. However these areas have been limited to those necessary for safe navigation. When feasible, replacement of removed woody debris back into the stream would offset the effects of removal.

During clearing and snagging operations unavoidable sediment disturbance may result in a temporary increase in turbidity in the immediate area work – during removal of debris as well during construction and placement of habitat enhancement structures. These turbidity events are not expected to adversely impact the water column in the immediate vicinity of the activity, potentially affecting estuarine fish and adjacent habitat. Overall water quality impacts of the proposed action are expected to be short-term and minor. No channel excavation work (i.e., removal of sediments) is associated with the work.

Oyster Reefs and Shell Banks. Oyster reefs and shell banks may also exist at many locations within the project areas. As oyster reefs are usually in shallows on the edges of navigation

channels, requirements to remove debris from those areas is not expected to occur unless the debris is deemed to be a threat to navigation. Any impacts to oyster reef and shell bank habitats would be temporary and minor. Waters near the clearing and snagging operation may experience temporary turbidity increases, but these impacts are expected to be minor and temporary. Project impacts to biota of oyster reefs are expected to be insignificant.

Potential Impacts on Geographically Defined Habitat Areas of Particular Concern (HAPC)

Area - Wide HAPC

Hermatypic Coral Habitat and Reefs. No Impacts - not present in the project vicinity.

Hardbottoms. No impact – not present in the project vicinity.

Sargassum Habitat. No impact – not present in the project vicinity.

State-designated Areas Important for Managed Species.

State-Designated Areas Important for Managed Species. Primary Nursery Areas (PNAs) are designated by the North Carolina Marine Fisheries Commission and are defined by the State of North Carolina as tidal saltwater, which provide essential habitat for the early development of commercially important fish and shellfish (15 NC Administrative Code 3B .1405). Many fish species undergo initial post-larval development in these areas. PNAs may be adjacent to several of the federal navigation projects included in the project area (see Section 5.03). As overall water quality impacts of the proposed action are expected to be short-term and minor and no channel excavation work (i.e., removal of sediments) is associated with the work, project related adverse impacts to primary nursery would be minor and temporary. Work is performed within the Wilmington District on an as needed basis to maintain and assure safe navigation within a federally authorized channel. The removal of snags and debris is viewed as short duration work and produces a *diminimus* amount of sediment disturbed within a given channel and less at distances away from the channel; therefore, no seasonal restrictions exist for the clearing and snagging activity.

Submerged Aquatic Vegetation. See discussion above on Submerged Aquatic Vegetation.

North Carolina HAPC

Big Rock. No impact - not in the project vicinity.

Bogue Sound. Clearing and Snagging would involve the AIWW. The proposed action will be small in scale, short in duration, and very minor in severity. Overall impacts are judged insignificant

Impacts on Pamlico Sound at Hatteras / Ocracoke Islands. No impact - not in the project vicinity.

Impacts on Cape Hatteras Sandy Shoals. No impact - not in the project vicinity.

Impact Summary for Essential Fish Habitat. The proposed action is not expected to cause adverse impacts to managed species or Essential Fish Habitat (EFH). Impacts from the proposed action will be small in scale, short in duration, and very minor in severity. Overall impacts are judged insignificant, and all elements of EFH and HAPC are expected to fully recover over a short time period.

6.05 Wildlife. The proposed action does not include the removal of leaning or overhanging trees that are embedded within the bank as long as they do not pose an imminent threat to the navigation channel. Although the removal of woody debris within the navigation channel may remove habitat available for some species, the construction of the habitat enhancement structures, where feasible, should offset possible impacts to wildlife. The proposed action is not expected to have an adverse impact on wildlife within the project areas.

6.06 Endangered and Threatened Species. Under Section 7 of the Endangered Species Act of 1973, as amended, federal agencies have a responsibility to assess the effects of the proposed actions on listed species. Informal consultation has been on going with the USFWS, Raleigh Field Office and the NMFS during preparation of the EA. The biological assessment of anticipated project impacts are as follows:

a. Shortnose Sturgeon. Pollution and over fishing are generally considered to be the principal causes of the decline of this species. The recent prohibition on taking any species of sturgeon will help to protect the Shortnose sturgeon from commercial and recreational fishing pressure.

The shortnose sturgeon is a bottom feeder, consuming various invertebrates and occasionally plant material. Adult foraging activities normally occur at night in shallow water areas adjacent to the deep-water areas occupied during the day. Removal of floating debris would not adversely affect the shortnose sturgeon. Removal of embedded debris may temporarily impact the feeding areas; however, no adverse affect would be expected by this action.

Analysis of the life history of the shortnose sturgeon and the physical characteristics of the channels indicate that the project areas may be used by the species. The proposed action will not result in significant habitat modification and feeding areas will not be significantly affected. The project may affect, but is not likely to adversely affect the Shortnose sturgeon.

b. Bald Eagle. Bald eagles may occur within a project area during a clearing and snagging activity. There may be nesting by bald eagles in areas adjacent to the proposed project areas. The USFWS's *Habitat Guidelines for Bald eagle in the Southeast* (1987) provides for an exclusion buffer of 455 meters (1500 feet) where no permanent changes can be made at a nest site. The removal of debris from the federal navigation channels as described in the proposed action, is not likely to adversely affect the Bald eagle.

c. West Indian Manatee. Although it would be expected to be a rare sighting, it is possible that a West Indian manatee could occur within the project area. The proposed action is not likely to adversely affect the species due to the nature of the work. The USFWS, Raleigh Field Office has issued a set of guidelines for avoidance of impacts to the west indian manatee in North Carolina waters (*Guidelines for Avoiding Impacts to the West Indian Manatee, Precautionary Measures for Construction Activities in North Carolina Waters (2003)*). The guidelines will be followed in all the proposed project areas where manatees may be encountered. The project is not likely to adversely affect the West Indian manatee.

d. Pondberry. Pondberry, for the most part, is associated with wetland habitats such as bottomland and hardwoods in the interior areas, and the margins of sinks, ponds, and other depressions in the more coastal counties. A population of pondberry has been sited by the USFWS (1986) in Bladen County, North Carolina. The proposed action is not likely to adversely affect the endangered pondberry.

e. American Alligator. The American alligator, classified as threatened due to similarity of appearance, is a large reptile that inhabits wetland areas. Albemarle Sound in North Carolina is designated as the most northern range for the species. The proposed action is not likely to adversely affect the American alligator.

f. Summary. Removal of debris from federal navigation projects may have temporary non-permanent effects on species such as shortnose sturgeon, due to disturbance and transient water quality changes, but due to the mobility of the species, effects are expected to be minimal. Removal of material may reduce habitat diversity, however, the limited amounts of debris removed from navigation channels is not significant when compared to the habitat areas in their entirety. The use of large woody debris, where feasible, for habitat enhancement purposes may contribute and maintain habitat diversity in the project areas. Based on the information provided in the EA, it has been determined that the proposed action may affect, but is not likely to adversely affect any federally listed species. Concurrence with this determination is being requested from the USFWS and NMFS concurrent with review of the EA.

6.07 Cultural Resources. There have been no specific sites identified in the proposed project areas, although historic evidence for the region would presume the presence of historic sites. Clearing and snagging operations are not considered to be a current undertaking under the implementation of Section 106 of the National Historic Preservation Act, 16 U.S.C. §§470 *et seq.*, and with the Secretary of the Interior's Standards and Guidelines (48 F.R. 44720-23). Implementation of the proposed action would not have adverse effects on cultural resources in federal navigation channels in North Carolina.

Investigation of historic and archaeological resources in the project areas would be conducted in accordance with Section 106 of the National Historic Preservation Act, 16 U.S.C. §§470 *et seq.*, and with the Secretary of the Interior's Standards and Guidelines (48 F.R. 44720-23). Due to the potential for underwater cultural resources to occur in the proposed action areas, investigation of areas that may be disturbed by placement/anchoring of large woody debris would be conducted

and coordinated with the North Carolina State Historic Preservation Office (SHPO), Underwater Branch prior to such work being undertaken. If suspected cultural resources are found during clearing and snagging operations, work would be moved to another area and the SHPO contacted for coordination on the potential resource site. Implementation of the proposed action is not expected to have adverse impacts on cultural resources that may occur in the proposed project areas.

6.08 Recreation and Aesthetic Resources. The proposed action minimizes impacts to recreation and aesthetic resources of a given area by avoiding those trees that are determined to be an immediate hazard to navigation (i.e., overhanging trees that are embedded within the bank or are located well outside the federal channel. Through the implementation of the proposed action, along with the enhancement of the areas through the construction of habitat enhancement structures, where feasible, it has been determined that no adverse impacts to recreation and/or aesthetic resources would be impacted. Recreation uses such as fishing, swimming, canoeing, water skiing, and bird watching are all important reasons for the channels to remain clear of dangerous debris.

6.09 Cumulative Impacts. Cumulative impacts are defined in 40 CFR 1508.7 as “Impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.” The NEPA process requires that these connected, similar action impacts be analyzed.

The proposed action, in conjunction with any past, present, or reasonably foreseeable future projects is not expected to have any significant adverse cumulative impacts to the environment. Future watershed development in the project areas and the above-mentioned reasonably foreseeable future projects would be subject to the requirements of and will be evaluated in accordance with NEPA.

6.10 Unavoidable Adverse Impacts of the Proposed Action. Minor short-term impacts such as increased short-term water column turbidity that would occur as part of clearing and snagging operations are unavoidable. Removal of large woody debris from the aquatic system would remove from availability important habitat and substrate material for aquatic species. These possible impacts would be minimized or averted by use of BMPs and implementation of the habitat enhancement components of the proposed action.

6.11 Irreversible and Irretrievable Commitment of Resources. The periodic clearing and snagging of federal navigation channels would expend fuel, materials, and labor.

6.12 Other Environmental Considerations.

6.12.1 Coastal Zone Management Act. Pursuant to the Federal Coastal Zone Management Act (CZMA) of 1972, as amended (P.L. 92-583), federal activities are required to be consistent to the maximum extent practicable with the federally approved coastal management program of the state. The proposed action would take place in areas designated as areas of environmental concern (AECs) under the North Carolina Coastal Management Program. Activities would occur in Estuarine Shorelines, Estuarine Waters, and Public Trust Areas.

The removal of woody debris from the designated federal channels is not considered development (G.S. 113A-103(5)(a)); therefore, the proposed action is in compliance with the North Carolina Coastal Management Program (15A NCAC 7H .0203). The project continues to be coordinated with the North Carolina Division of Coastal Management and comments received during the scoping process have been taken into consideration in preparation of the EA. The proposed action is in compliance with local land use plans. Concurrence with this determination is being requested from the North Carolina Division of Coastal Management.

6.12.2 Clean Water Act. Generally, the removal of debris within a given waterway and transporting said debris to an upland area does not require clearance under Section 404 of the Clean Water Act. The proposed action of creating habitat enhancement structures using woody debris removed from the channels meets the requirements of General Water Quality Certification Number 3348 (WQC #3348) issued on March 18, 2002 (Appendix D). WQC #3348 authorizes the discharge of fill material to waters and wetland areas as described in Regional General Permit Number 198500194 (Artificial Reefs and Fish Attractors). The project will continue to be reviewed for applicability of Section 404 of the Clean Water Act as details of placement of habitat enhancement structures are pursued.

6.12.3 National Historic Preservation Act. The National Historic Preservation Act (NHPA) was passed in 1966 to protect, enhance, and preserve any property that possesses significant architectural, archaeological, historical, or cultural characteristics. Executive Order 11593 of 1974 further defined the obligations of federal agencies in this regard. Section 106 of this act requires the head of any federal agency with jurisdiction over a federally financed action, prior to the expenditure, to take into account the effect of the action on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register of Historic Places. There are no known cultural resources affected by the proposed action. Areas proposed for placement of habitat enhancement structures will be coordinated with the SHPO prior to implementation.

6.12.4 Executive Order 11990 (Protection of Wetlands). As reviewed within this EA, there are no impacts to wetlands as a result of the proposed action. The proposed action is in compliance with Executive Order 11990.

6.12.5 Executive Order 11988 (Floodplain Management). The proposed action would occur in the floodplain. This action is not anticipated to induce development of the floodplain, nor would it adversely affect the floodplain. The proposed action is in compliance with the requirements of Executive Order 11988.

6.12.6 Executive Order 13045 (Protection of Children from Environmental Health Risks). There would be no known short-term or long-term effects on the health or safety of children as a result of the proposed action. The proposed action is in compliance with Executive Order 13045.

6.12.7 Executive Order 11593 (Protection and Enhancement of the Cultural Environment). The proposed action is in compliance with Executive Order 11593. Should cultural resources be

discovered during implementation of the proposed action, appropriate coordination with the State Historic Preservation Office (SHPO) would be pursued to prevent damage to those resources. The proposed action would not impact any cultural resources.

6.12.8 Other State and Local Plans and Policies. The U.S. Army Corps of Engineers, Wilmington District pursues close planning relations with local and regional agencies and planning bodies of adjacent cities, counties, and states for cooperation and resolution of mutual land use issues or environmental problems. In addition, coordination may be made with state and regional planning clearinghouses as established pursuant to Executive Order 12372 of 1982. Information from relevant state, regional, and local agencies was reviewed during preparation of this EA.

6.12.9 Hazardous/Toxic and Radioactive Waste. No known hazardous material sites are present in the federal navigation project areas. Clearing and snagging of non-woody debris would continue to be assessed as potential hazards and a determination made for suitable disposal.

7.00 COORDINATION AND PUBLIC INVOLVEMENT

7.01 Scoping. A scoping letter was mailed to state, federal, local agencies, and concerned public on July 31, 2003. Correspondence received during the scoping timeframe was considered in the preparation of this EA and are included in Appendix C.

7.02 Public Notice. Public notice of clearing and snagging activities will be provided on the Wilmington District website: <http://www.saw.usace.army.mil/environmental/index.htm> as well as to a list of interested parties via e-mail.

7.03 List of Recipients. The following agencies and individuals have been provided a copy of the Environmental Assessment for a 30-day comment and review period. The EA is available on the Wilmington District website listed above in Section 7.02.

REPRESENTATIVES

Honorable Mike McIntyre
Honorable Walter B Jones
Honorable John Edwards
Honorable Elizabeth Dole

FEDERAL AGENCIES

National Marine Fisheries Service, Southeast Regional Office
National Marine Fisheries Service, Beaufort Marine Fisheries Center

U.S. Fish and Wildlife Service, Raleigh Field Office
U.S. Coast Guard Safety Office, Wilmington
U.S. Coast Guard, Fifth District, Portsmouth, Virginia
HUD, Greensboro, North Carolina
Advisory Council on Historic Preservation
Department of the Interior, Office of the Solicitor, Energy and Resource Division
Department of the Interior, Office of Environmental Policy & Compliance
Federal Highway Administration
National Centers for Disease Control & Prevention
State Conservationist, Natural Resources Conservation Service, USDA
Environmental Protection Agency, Atlanta, Georgia
U.S. Forest Service, Southern Region
U.S. Department of Energy, Office of Environmental Compliance
National Park Service, Southeast Archeological Center
U.S. Marine Corps, Marine Corps Base, Camp Lejeune, North Carolina

STATE AGENCIES

North Carolina State Clearinghouse
North Carolina Division of Coastal Management
North Carolina Department of Cultural Resources
North Carolina Department of Environment and Natural Resources
North Carolina Division of Marine Fisheries
North Carolina Wildlife Resources Commission
North Carolina State Library
University of North Carolina at Wilmington, Randall Library
North Carolina Collection, Joyner Library, East Carolina University
North Carolina Collection, Wilson Library, University of North Carolina, Chapel Hill
North Carolina Department of Transportation
North Carolina Commission of Indian Affairs
Virginia Council on Indians
South Carolina Indian Affairs Commission

LOCAL GOVERNMENT

Brunswick County Board of Commissioners
New Hanover County Board of Commissioners
Pender County Board of Commissioners
Onslow County Board of Commissioners
Craven County Board of Commissioners
Carteret County Board of Commissioners
Pamlico County Board of Commissioners
Bertie County Board of Commissioners

Chowan County Board of Commissioners
Martin County Board of Commissioners
Dare County Board of Commissioners
Hyde County Board of Commissioners

INDEPENDENT GROUPS AND INDIVIDUALS

The Nature Conservancy, North Carolina Chapter
Mr. Clem Bribitzer, Pender Watch
Mr. Ray P. Brandi, Cape Fear Community College, Marine Division
Ms. Janice L. Allen, Director of Land Protection, North Carolina Land Trust
Mr. Jeffrey A. Fisher, Tar River Land Conservancy
Ms. Michelle Duval, Environmental Defense Fund of North Carolina
Mr. Walker Golder, National Audubon Society
Dr. Orrin G. Pilkey, PhD, Duke University, Department of Geology
Mr. Todd Miller, Executive Director, North Carolina Coastal Federation

8.00 POINT OF CONTACT

Any comments or questions regarding this Environmental Assessment should be sent to Ms. Trudy Wilder, U.S. Army Corps of Engineers, Wilmington District, Post Office Box 1890, Wilmington, North Carolina 28402-1890. Telephone contact is: 910-251-4581 or e-mail at: Trudy.N.Wilder@usace.army.mil.

9.00 FINDING

The proposed action is not expected to significantly affect the quality of the human environment; therefore, an Environmental Impact Statement (EIS) will not be prepared. If this opinion is upheld following circulation of this EA, a Finding of No Significant Impact will be prepared and signed.

10.00 REFERENCES

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APPENDIX A

Authorized Projects

ATLANTIC INTRACOASTAL WATERWAY
BETWEEN
NORFOLK, VA., AND THE ST. JOHNS RIVER, FLA.
Condition of Improvement, September 30, 1990

ATLANTIC INTRACOASTAL WATERWAY
BETWEEN
NORFOLK, VA., AND THE ST. JOHNS RIVER, FLA.

Continued
Condition of Improvement, September 30, 1990

Acts	Work Authorized	Documents
July 25, 1912	12' x 90'-300' channel, Norfolk, Beaufort section	HD 391/62/2
Do.	Purchase of canal	HD 589/62/2
Aug. 8, 1917	Route changes	Apr. Sec. War
July 18, 1918	Route change	May 1919
Jan. 21, 1927	12' x 90' channel, Beaufort-Cape Fear River	HD 450/69/1
July 3, 1930	***tidal lock, Snows Cut	HD 41/71/1
Mar. 4, 1933	8' x 75' channel, Cape Fear River-Winyah Bay, S. C.	R&H Com. Doc. 5/72/1
Aug. 30, 1935	Fairfield Bridge	R&H Com. Doc. 5/75/1
Aug. 26, 1937	10' x 90' channel in New River	16/75/1
Do.	Increase channel dimensions 12' x 90', Cape Fear River-Winyah Bay, S. C.	HD 549/75/3
June 20, 1938	12' x 90' channel to Swansboro	HD 691/75/3
Do.	Boat basin at Southport	HD 421/80/1
June 30, 1948	*12' x 90' channel in New River	HD 723/80/2
May 17, 1950	Vicinity of Fairfield-drainage	HD 341/81/1
Do.	Masonboro Inlet and connecting channels including jetties at Inlet	HD 379/81/1
Sep. 3, 1954	***12' x 90' channel in Peltier Creek	Detailed Project Report, April 1963
Nov. 29, 1963	**6' x 90' channel to Bogue Inlet	Detailed Project, July 1965
July 14, 1960	***8' x 150' channel through New Topsail Inlet	HD 514/89/2
Apr. 7, 1966	7' x 80' channel in Old Topsail Creek to W	HD 515/89/2
Sec. 107	7' x 80' channel to Banks Channel to W	HD 92-142/92/1
July 14, 1960	Southport Small Boat, 6' deep	HD 94-597/94/1
Nov. 7, 1966	Carolina Beach Harbor, 6' deep	Apr. Director
Dec. 31, 1970	Replacement of 5 highway bridges	Detailed Project Report, June 1980
Oct. 22, 1976	Replacement of 2 highway bridges	Detailed Project Report, Sep. 1983
Oct. 2, 1980	Section III modification of Masonboro Inlet Navigation Project	
Feb. 18, 1982	**8'x150' channel through Carolina Beach Inlet	
Sec. 107		
July 14, 1960	**8'x150' channel through Bogue Inlet	
Sep. 7, 1983		
Sec. 107		
July 14, 1960	Mod. of terms of local coop. to allow for full fed. funding of 3 remaining bridges	
Nov. 17, 1986		

PROJECT: A waterway, 12 feet deep, with width varying from 90 feet in land cuts to 300 feet in open waters; the construction, operation and maintenance of suitable bridges; saltwater-intrusion preventive measures, including a pumping plant and dam, in the vicinity of Fairfield, N.C.; ***a channel, 6 feet deep, 50 feet wide, to a basin, 5 feet deep, 200 feet wide, and 600 feet long, in Peltier Creek; **a channel, 5 feet deep, 90 feet wide, to the gorge in Bogue Inlet; thence, 8 feet deep and 150 feet wide through the inlet; a channel, 12 feet deep, 90 feet wide, to a turning basin, 12 feet deep, 200 feet wide, and 350 feet long, at Swansboro; a channel, 6 feet deep, 90 feet wide, through New River Inlet to the Intracoastal Waterway in New River; * a channel, 12 feet deep, 90 feet wide, in New River to the Seaboard Coast Line Railroad Bridge at Jacksonville, N. C., and a basin at Jacksonville of the same depth and varying in width; **a channel, 8 feet deep, 150 feet wide, through New Topsail Inlet, thence a channel, 7 feet deep, 80 feet wide, by way of Banks Channel, paralleling the barrier beach to the Intracoastal Waterway and a channel, 7 feet deep, 80 feet wide, in Old Topsail Creek to the Intracoastal Waterway; a channel, 14 feet deep, 400 feet wide, across the ocean bar at Masonboro Inlet, thence 12 feet deep, 90 feet wide, to the Intracoastal Waterway by way of Banks and Motte Channels; a turning basin, 15 feet deep, 300 feet wide, and 700 feet long, near Masonboro Inlet, with three 15-pile dolphins therein; a jetty on each side of Masonboro Inlet, extending to the 14-foot depth in the ocean; ** a channel, 8 feet deep, 150 feet wide, through Carolina Beach Inlet to the Intracoastal Waterway; modification of Masonboro Inlet Navigation Project to mitigate jetty-related erosion at Wrightsville Beach by placement of dredged sand fill; maintenance of a channel, 6 feet deep, 80 feet wide, and 8,000 feet long, to a turning basin, 6 feet deep, 13 feet wide, and 180 feet long, at Carolina Beach Harbor; ***a tidal lock in the land cut near the Cape Fear River; a boat basin, 12 feet deep, 230 feet wide, 450 feet long, at the town of Southport; and maintenance of the general navigation features of the North Carolina State Ports Authority Small-Boat Harbor at Southport, N.C., consisting of an entrance channel, 150 feet wide and 400 feet long; an eastern harbor-access channel, 70 feet wide and 430 feet long; and a western harbor-access channel, 60 feet wide and 185 feet long, to a turning basin, 180 feet wide and 550 feet long; including suitable widening at channel intersections; all to a depth of 6 feet. Length of channels and basins totals 347.7 miles.

PROGRESS: Complete, except for training wall and three tie-up dolphins at Masonboro Inlet, and replacement of the three remaining highway bridges with 65 feet high fixed bridges. The new Walter B. Jones (formerly Wilkerson Creek) Bridge was opened to traffic on July 31, 1981. The Joseph P. Knapp Bridge (formerly Coinjock) was opened to traffic on November 13, 1986.

ATLANTIC INTRACOASTAL WATERWAY
BETWEEN
NORFOLK, VA., AND THE ST. JOHNS RIVER, FLA.

Continued

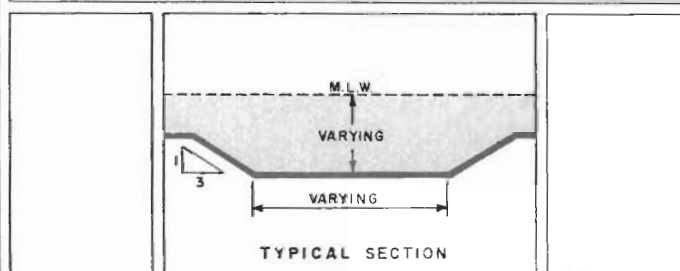
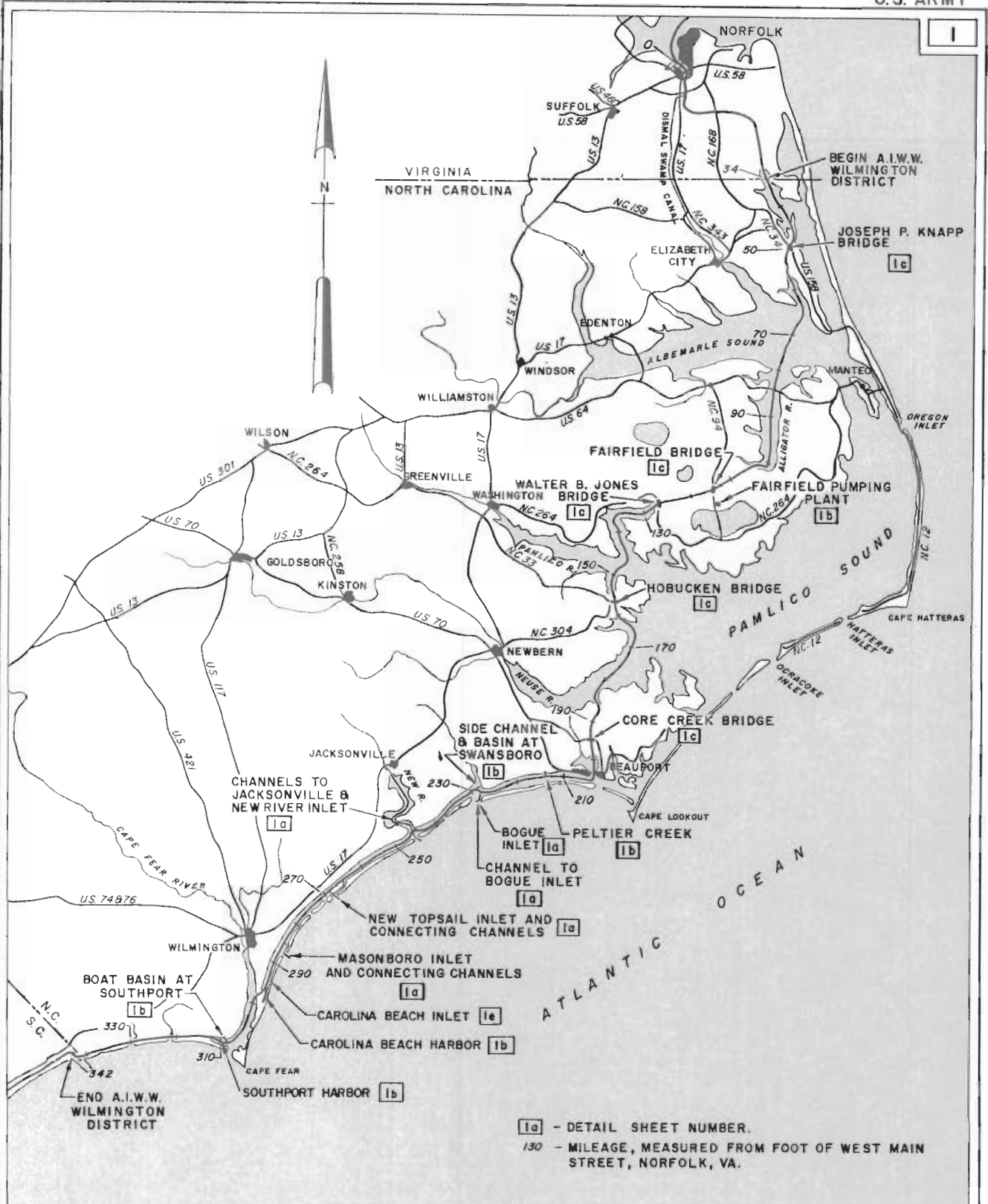
Condition of Improvement, September 30, 1990

VARIATION OF WATER SURFACE: In the waterway north of Neuse River, variations of 1 to 3 feet are due to winds. Between Neuse River and Cape Fear River, the normal tidal range varies from 3.5 feet near inlets to 1 foot at points between. The mean range of tide in the section from Cape Fear River, N.C., to Little River, S.C., varies from 4.6 feet near inlets to varying stages at points between. On October 15, 1954 (Hurricane Hazel), the tide at Holden Beach reached an elevation of 17.6 feet.

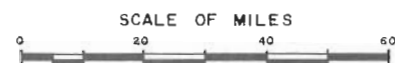
COST OF CONSTRUCTION: \$43,479,949 Federal
72,917 Contributed

**See Bogue Inlet, Carolina Beach Inlet, Masonboro Inlet (Sec. III), and New Topsail Inlet and Connecting Channels listed under Continuing Authority-Small Navigation Projects, pages Nos. 55d and 55f.

***12-foot project in Peltier Creek was deauthorized Nov. 17, 1986 and Tidal Lock in Snows Cut was deauthorized Sep. 23, 1986.

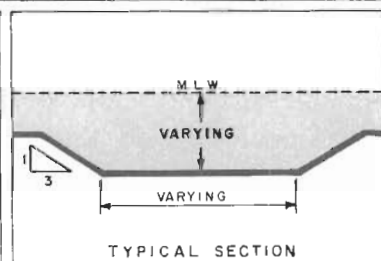
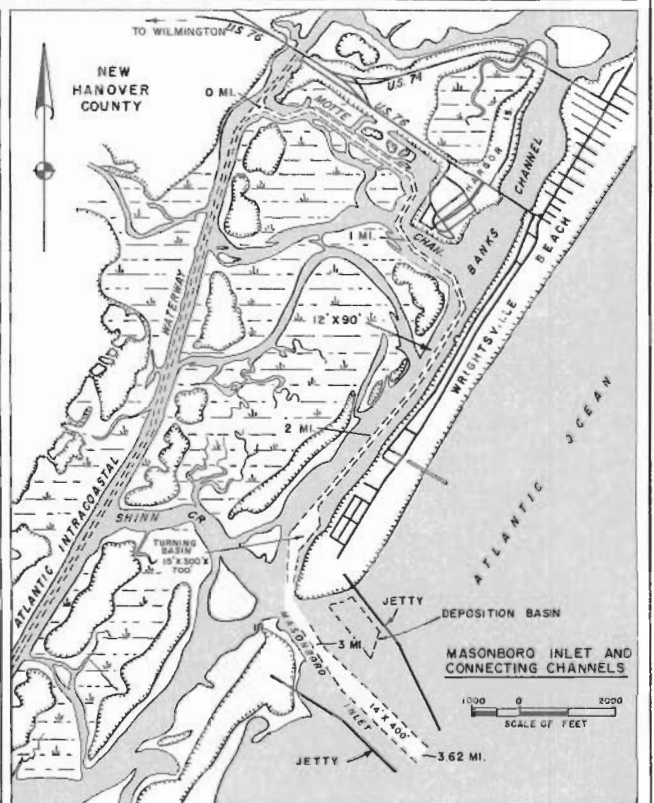
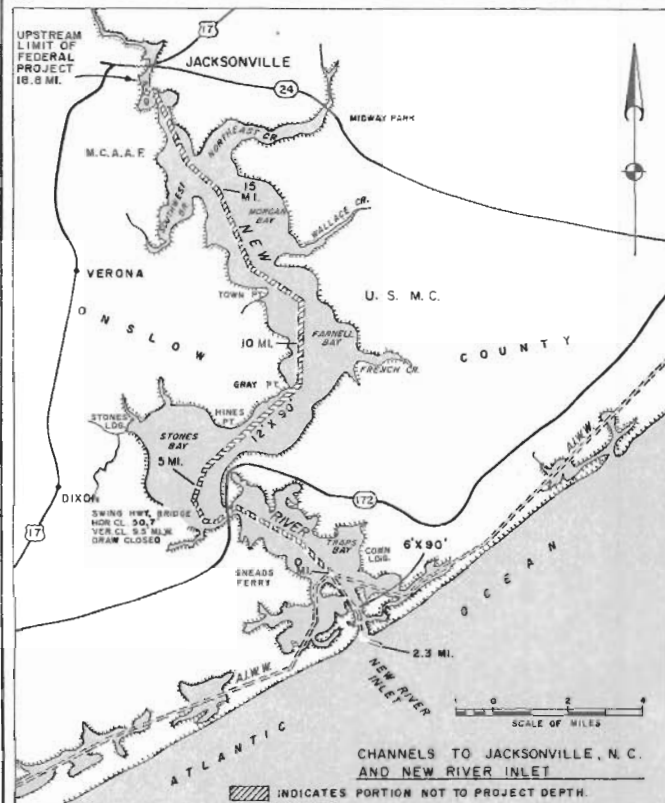
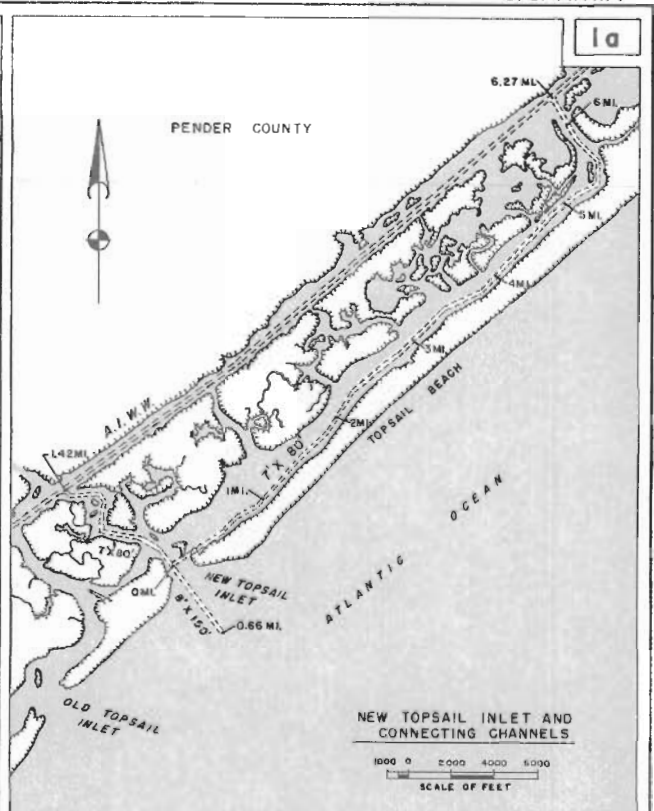
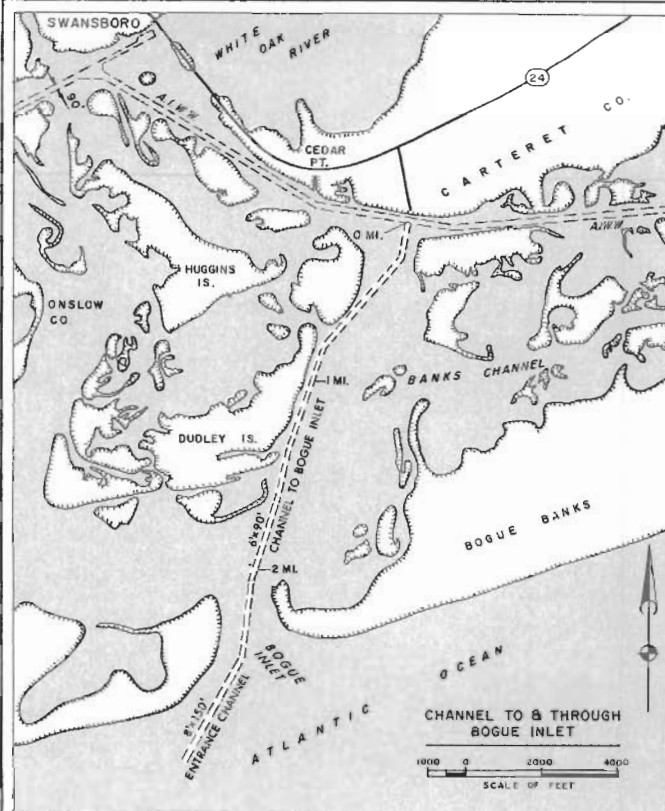


**ATLANTIC INTRACOASTAL WATERWAY
BETWEEN
NORFOLK, VA. AND THE ST. JOHNS RIVER, FLA.
(WILMINGTON DISTRICT)**



CORPS OF ENGINEERS
MAP REVISED SEPTEMBER 1990

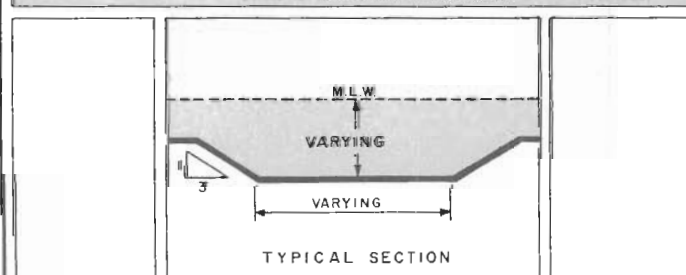
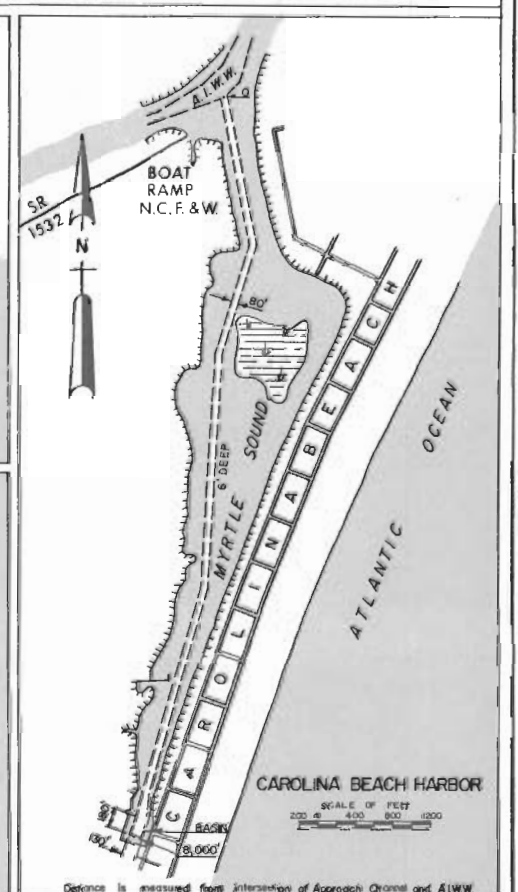
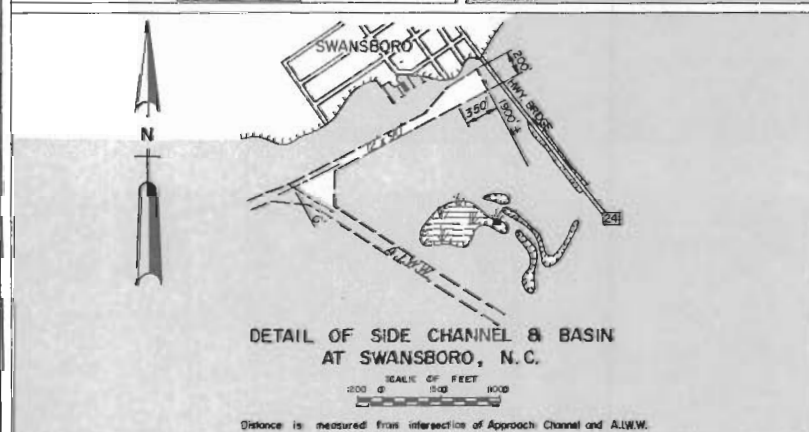
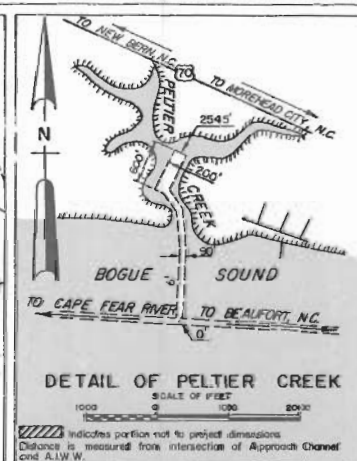
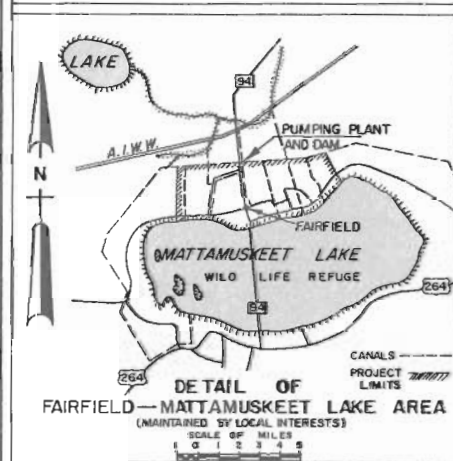
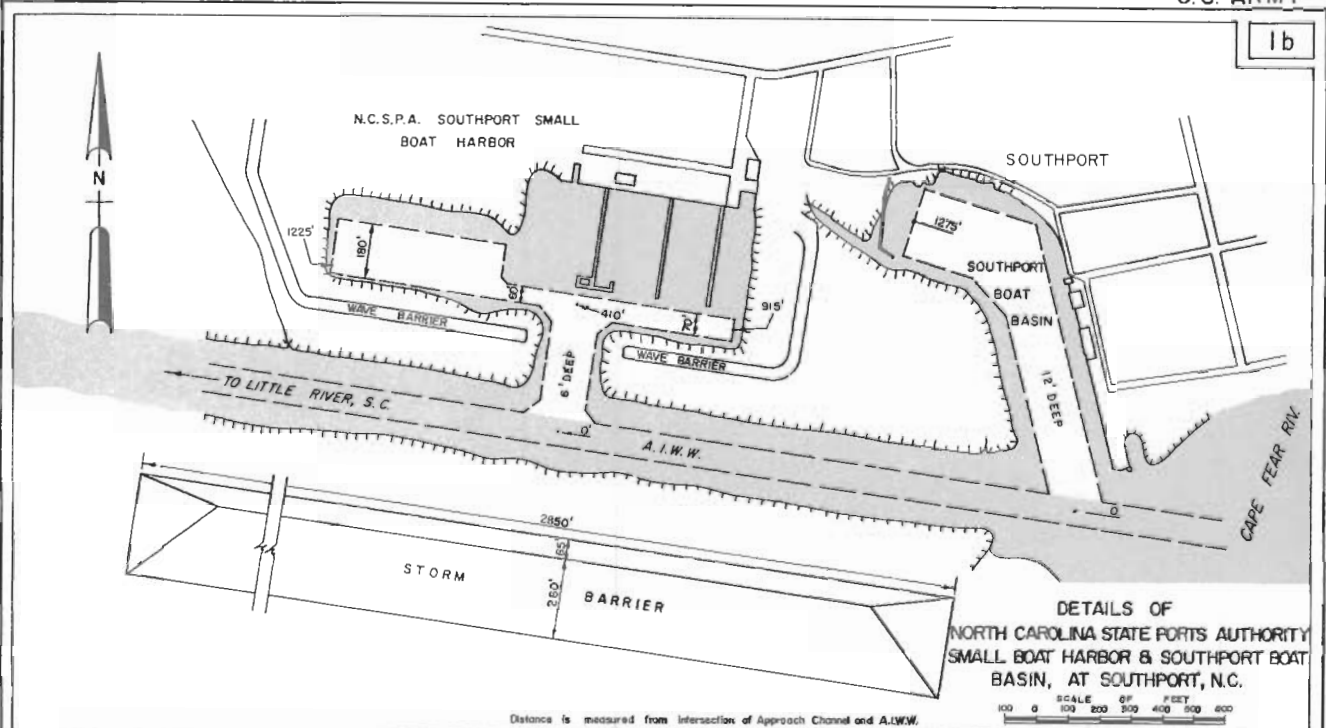
WILMINGTON, N.C.



ATLANTIC INTRACOASTAL WATERWAY
BETWEEN
NORFOLK, VA. AND THE ST. JOHNS RIVER, FLA.
(WILMINGTON DISTRICT)

**CHANNELS TO BOGUE INLET,
JACKSONVILLE AND NEW RIVER
INLET, MASONBORO INLET, AND
NEW TOPSAIL INLET**

CORPS OF ENGINEERS WILMINGTON, N.C.
MAP REVISED SEPTEMBER 1983



ATLANTIC INTRACOASTAL WATERWAY
BETWEEN
NORFOLK, VA. AND THE ST. JOHNS RIVER, FLA.

N.C.S.P.A. SMALL BOAT HARBOR & SOUTHPORT
BOAT BASIN, FAIRFIELD—MATTAMUSKEET LAKE
AREA, PELTIER CREEK, SIDE CHANNEL &
BASIN AT SWANSBORO, CAROLINA BEACH HARBOR
(WILMINGTON DISTRICT)

CORPS OF ENGINEERS
MAP REVISED SEPTEMBER 1987

WILMINGTON, N.C.

CAPE FEAR RIVER, N. C., ABOVE WILMINGTON

Condition of Improvement, June 30, 1973

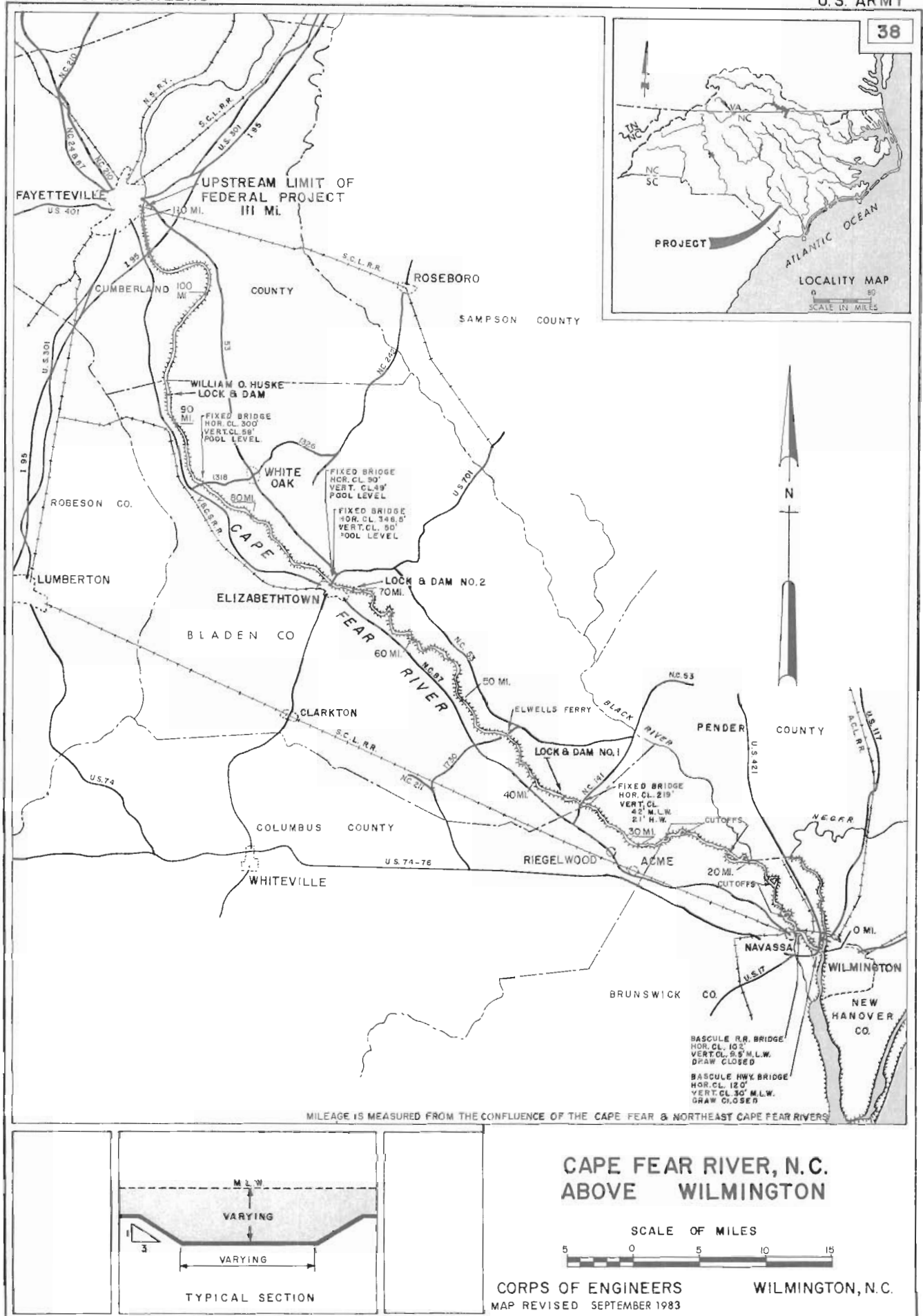
Acts	Work authorized	Documents
Documents		
June 25, 1910	8' channel and locks and dams Nos. 1 and 2	HD 890/60/1
June 26, 1934	Operation and care of locks and dams provided for with funds from War Department appropriations for rivers and harbors	
Aug. 30, 1935	Lock and dam No. 3	HD 786/71/3
Aug. 26, 1937	25' x 200' channel to basin, 400' x 500' at Navassa; 8' channel, varying widths, to Fayetteville, N. C.	R&H Com. Doc. 17/75/1
Sec. 4 of Flood Control Act, Dec. 22, 1944	Recreation facilities	
Sep. 10, 1965	Designate lock and dam No. 3 as the William O. Huske Lock and Dam	Public Law 89-177
Oct. 27, 1965	12' x 140' channel to mileboard 30; 12' x 150' cutoff channels	HD 252/89/1

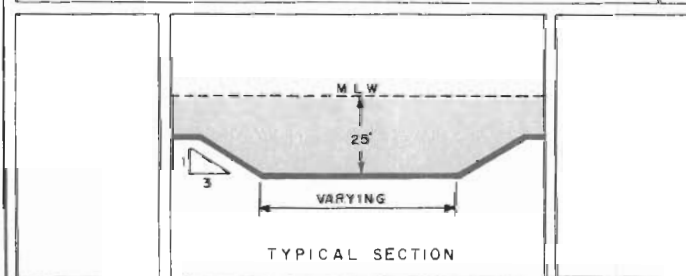
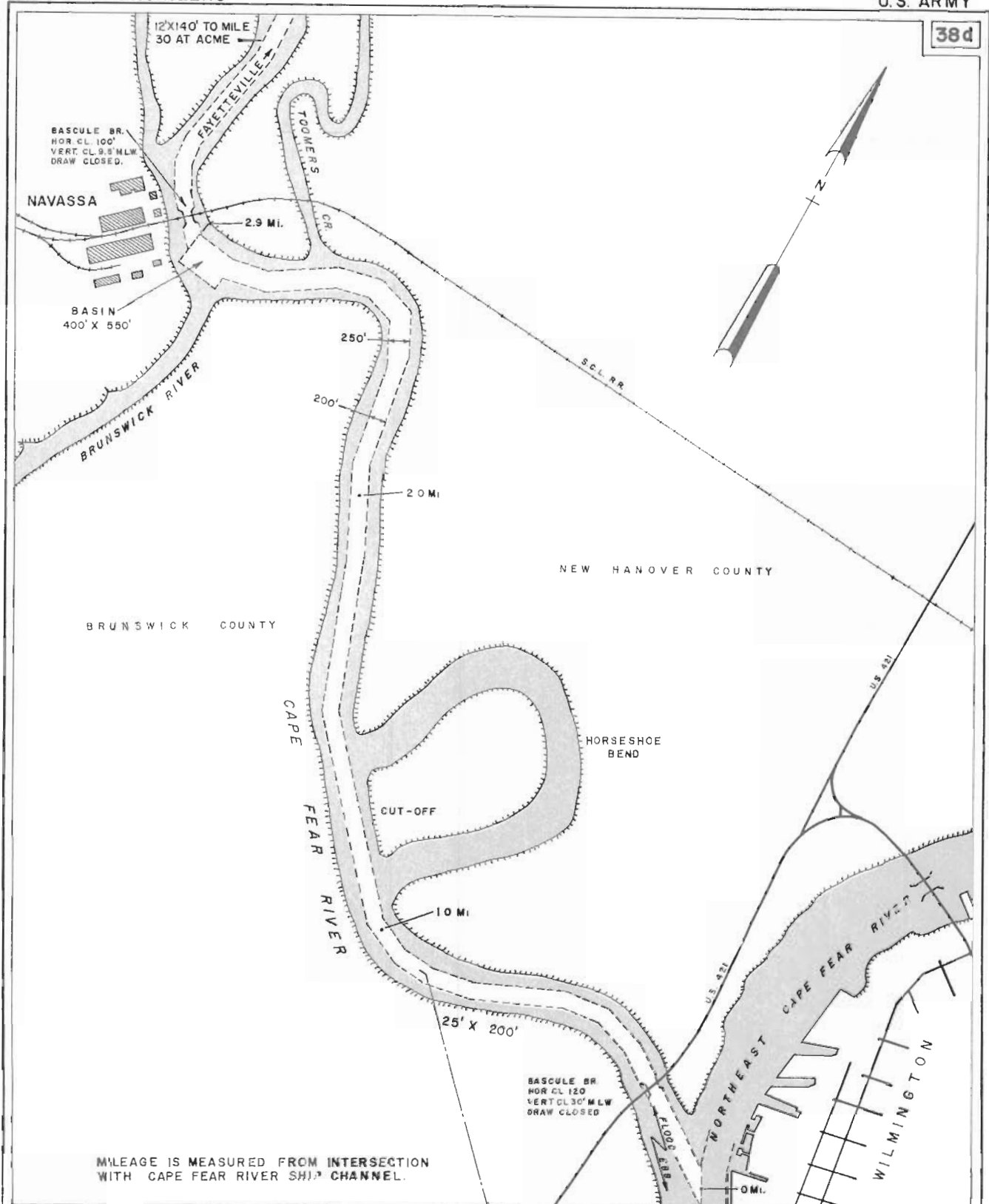
PROJECT: A channel 25 feet deep and generally 200 feet wide, to a basin, 400 feet wide, 550 feet long, at Navassa, 2.9 miles; thence 12 feet deep, 140 feet wide, to mileboard 30 at Acme, with five channels cutoffs, 12 feet deep, 150 feet wide, to eliminate sharp bends; thence a channel of 8-foot minimum depth and varying widths to Fayetteville, 111 miles, obtained by three locks and dams and the dredging of river shoals; and recreation facilities at the locks and dams.

PROGRESS: Complete.

VARIATION OF WATER SURFACE: Tidal below lock No. 1. Average, 3.4 feet at Wilmington to 1 foot at lock No. 1. Extreme, 8.2 feet at Wilmington and 1.5 feet at lock No. 1. The maximum flood stage of record (Sep. 1945) at Fayetteville is 68.9 feet, U.S.W.B. gage, zero of which is 20.54 feet m.s.l.

COST OF CONSTRUCTION: \$3,759,573.





CAPE FEAR RIVER, NC ABOVE WILMINGTON

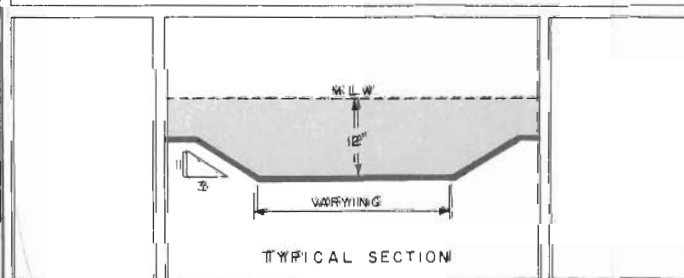
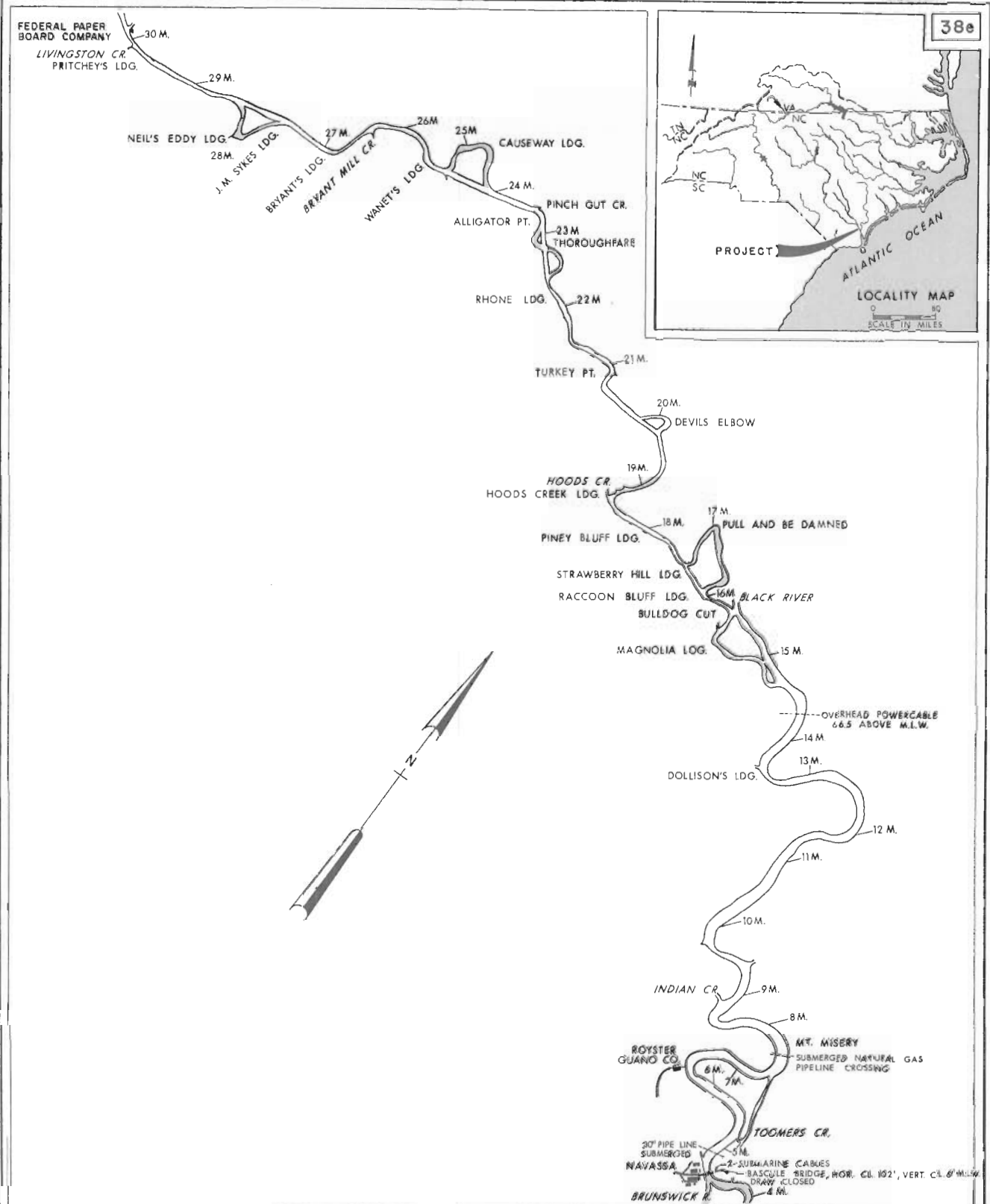
25 FOOT CHANNEL WILMINGTON TO NAVASSA

SCALE OF FEET



CORPS OF ENGINEERS
MAP REVISED JUNE 1970

WILMINGTON, N.C.



CAPE FEAR RIVER, NC. ABOVE WILMINGTON

12-FOOT CHANNEL NAVASSA TO MILE 30

SCALE OF FEET



CORPS OF ENGINEERS
MAP REVISED SEPTEMBER 1976

WILMINGTON, N.C.

WILMINGTON HARBOR, NORTH CAROLINA

Condition of Improvement, September 30, 1990

Acts	Work authorized	Documents
July 3, 1930	30' x 300' channel to Wilmington; anchorage basin, 2,000' long; turning basin, 600' x 1,000'	R&H Com. Doc. 39/71/2
Mar. 2, 1945	Increase width of existing channel to 400'; increase width of turning basin to 800'; a 12' x 100' connecting channel with the Intracoastal Waterway	HD 131/76/1
Do	Increase depth to 32'	SD 83/76/1
Do	25' x 200' channel from Hilton Bridge to a 600' wide basin, 1-1/4 miles above	SD 170/76/3
May 17, 1950	Increase depth of bar channel to 35', river channel to 34' to Castle Street	HD 87/81/1
Oct. 23, 1962	Increase width of bar channel to 500' and depth of river channel to 38' up to Castle Street	SD 114/87/2
Mar. 10, 1964 Sec. 107 July 14, 1960	*Enlarge basin and extend channel above Hilton Bridge	Detailed Proj. Rept., Feb 17, 1964
July 13, 1982 Sec. 5 March 4, 1915	Widen turning basin opposite NC Port Facility	Letter Report July 8, 1982
Nov. 17, 1986	Increase width of fourth east Jetty Channel to 500'; increase depth of channel between Castle St. and NC 133 Bridge to 35'; widen the existing turning basin just above the mouth of the northeast (Cape Fear) River by 100' to a depth of 35'; and acquire 2,800 acres of environmental lands with industrial access to the river.	HD 185/98/2

*See Northeast Cape Fear River, N.C., description listed under Continuing Authority - Small Navigation Projects, page No. 55j.

WILMINGTON HARBOR, NORTH CAROLINA

Continued

Condition of Improvement, September 30, 1990

PROJECT: A channel, 40 feet deep, 500 feet wide, through the ocean bar, thence 38 feet deep, 400 feet wide, except fourth east jetty channel which is 500 feet wide, with increased width at bends, to the upper end of the anchorage basin (foot of Castle Street) at Wilmington; thence 35 feet, 400 feet wide to highway 133 bridge; thence 32 feet deep, 400 feet wide, to Hilton Bridge over Northeast Cape Fear River, with increased widths at bends; an anchorage basin at Wilmington, 38 feet deep, 2,000 feet long, 900 feet wide at the upper end, 1,200 feet wide at the lower end, with approaches, 1,500 feet long at the upper end and 4,500 feet long at the lower end, with some widening of the transition channel at the downstream end; a turning basin opposite the principal terminals at Wilmington, 35 feet deep, 1,000 feet long, 800 feet wide, with suitable approaches at each end; a channel, 12 feet deep, 100 feet wide, northwestward from the Intracoastal Waterway at Snows Cut to the main river channel; and a channel, 25 feet deep, 200 feet wide, from Hilton Bridge to a point 1-2/3 miles above, including a turning basin, 25 feet deep, 700 feet wide, and 500 feet long, at a point 1.25 miles above the bridge and environmental improvements to include acquiring 2,800 acres of wetlands, river bluffs and ecotones and provision for a minimum number of specially designed corridors across the wetlands for industrial access to the river.

PROGRESS: Complete, except for providing the channel width of 400 feet between the old highway and Hilton Bridges, a depth of 38 feet in the widest portion of the turning basin opposite the State Port Facility and construction of the latest modification.

VARIATION OF WATER SURFACE: Tidal. Mean range, 4.7 feet at the ocean bar, 3.6 feet at Keg Island, and 3.4 feet at Wilmington. Extremes, 14.0 feet at Southport, 10.5 feet at Sunny Point Army Terminal, and 8.2 feet at Wilmington.

COST OF CONSTRUCTION: \$18,710,576 Federal; \$40,000 contributed.
\$920,342 PED for latest mod. to date.

CASHIE RIVER, NORTH CAROLINA

Condition of Improvement, June 30, 1973

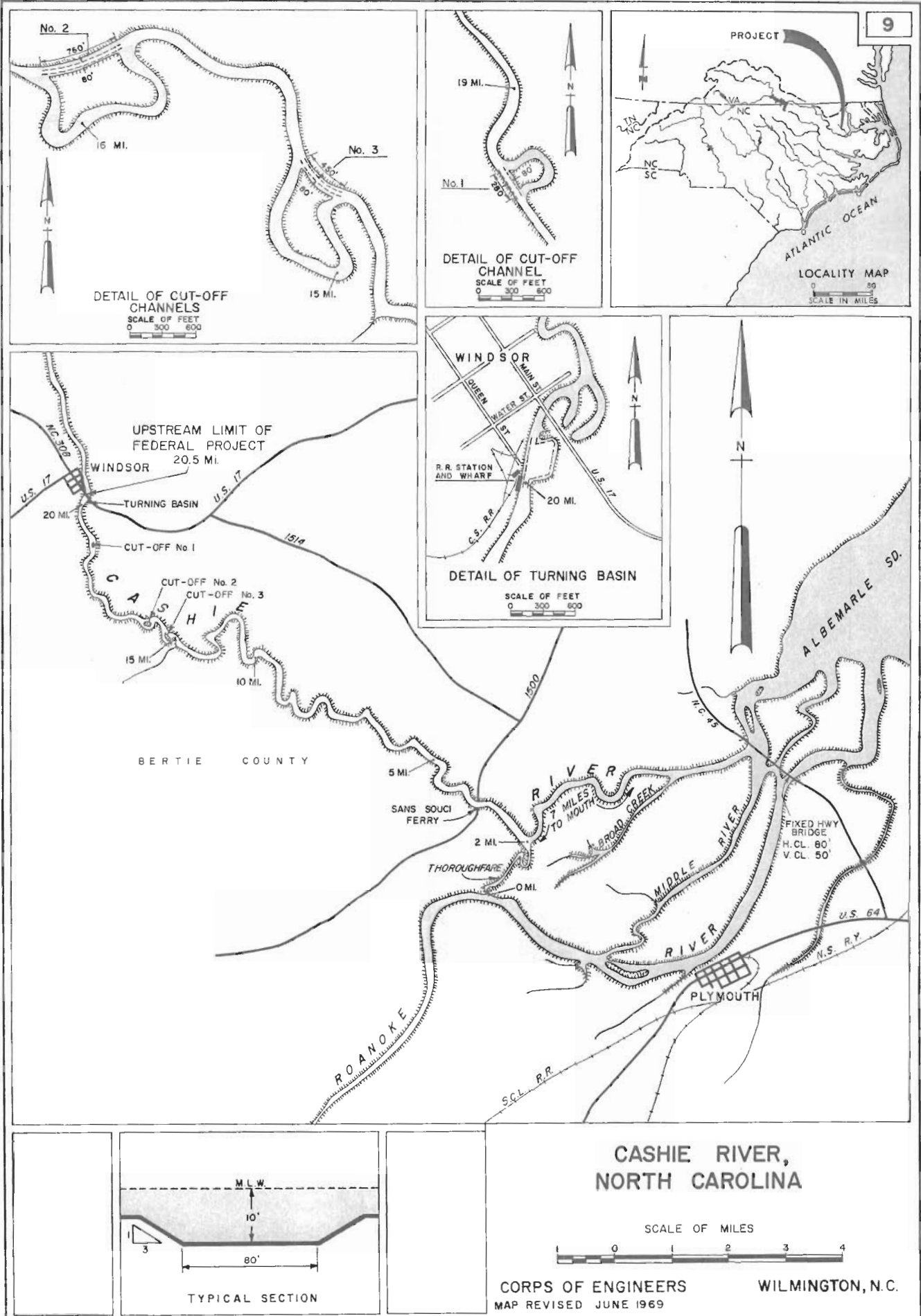
Acts	Work authorized	Documents
July 3, 1930	Removal of obstructions	HD 779/69/2
Aug. 26, 1937	3 cutoff channels and turning basin	R&H Com. Doc. 31/75/1

PROJECT: The removal of logs, snags, and other obstructions between Windsor and the mouth of the Thoroughfare in Roanoke River, a distance of 20.5 miles; the construction of three cutoff channels, 80 feet wide through sharp bends at points 1, 4, and 5 miles below Windsor; and a turning basin about 1.1 acres in area at Windsor; all to a depth of 10 feet.

PROGRESS: Complete.

VARIATION OF WATER SURFACE: Nontidal. Variations are due to winds.

COST OF CONSTRUCTION: \$40,403.



CHOWAN RIVER, NORTH CAROLINA

Condition of Improvement, June 30, 1974

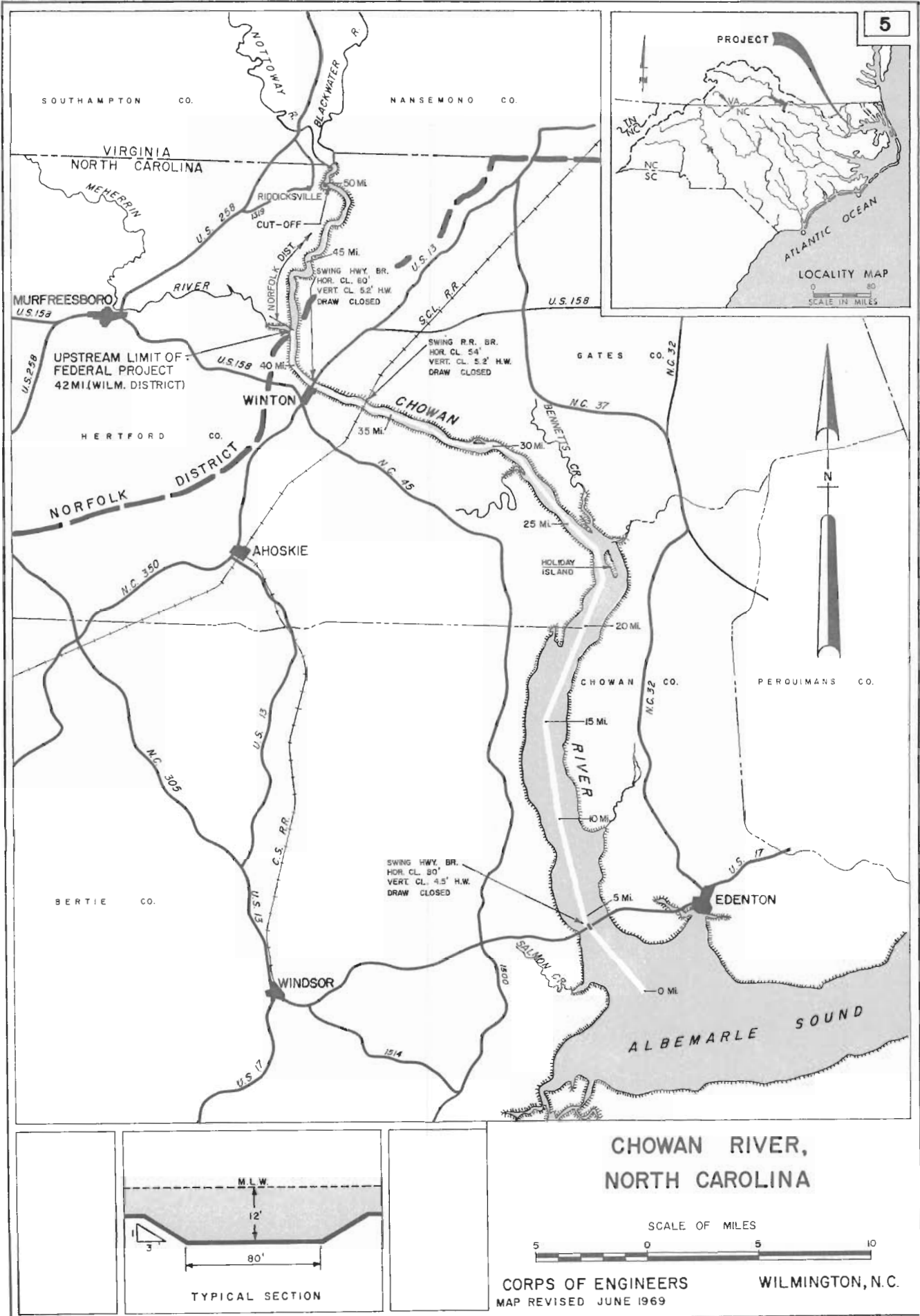
Acts	Work authorized	Documents
March 2, 1945	Present channel dimensions	HD 101/76/1

PROJECT: A channel, 12 feet deep, 80 feet wide, from the mouth to the confluence of the Meherrin River, N. C. The remaining portion of the project, north of its confluence with the Meherrin River, is within the Norfolk District.

PROGRESS: Complete. Natural depths and width exceed project dimensions to Meherrin River mouth.

VARIATION OF WATER SURFACE: Nontidal. Variations are due to winds.

COST OF CONSTRUCTION: None.



LOCKWOODS FOLLY RIVER, NORTH CAROLINA

Condition of Improvement, September 30, 1985

Acts	Work authorized	Documents
Sept. 19, 1880	6' x 100' channel from ocean to bridge at Supply	AR, 1887, p. 1099
June 3, 1980	*8' x 150' channel through Lockwoods Folly Inlet	Detailed Project Report, Jan. 31, 1979
Sec. 107		
July 14, 1960		

****PROJECT:** A channel, 100 feet wide, 6 feet deep, from AIWW to the bridge at Supply, to be secured by dredging through oyster rocks and mudflats, and a channel 12 feet deep and 150 feet wide from the AIWW through the ocean bar to deep water in the Atlantic Ocean.

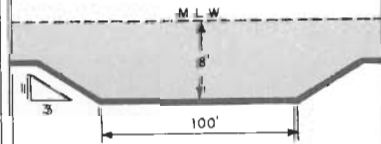
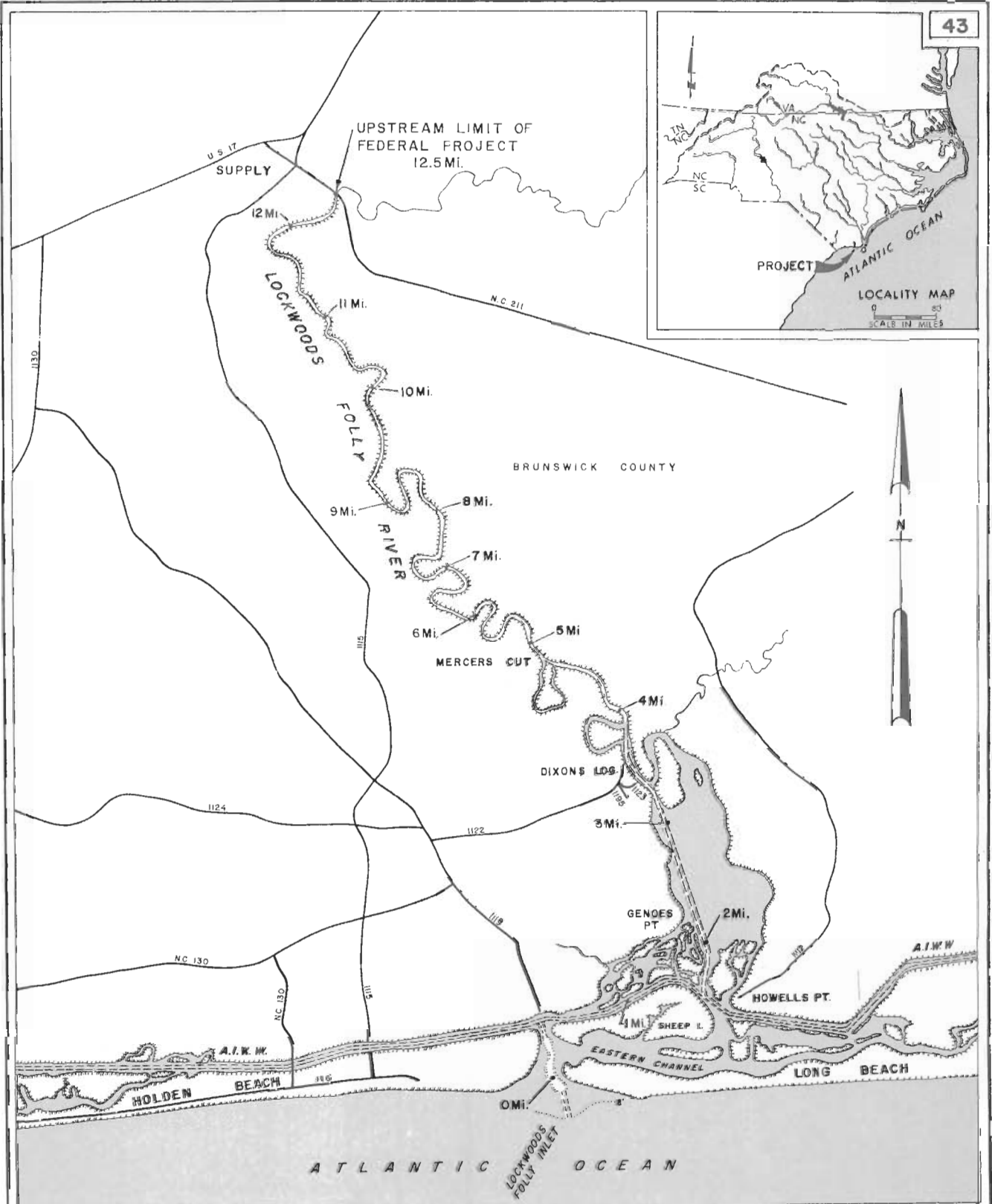
****PROGRESS:** Complete, except for deepening the ocean bar channel 12 feet.

VARIATION OF WATER SURFACE: Tidal. Mean range is about 4.5 feet near the inlet and 2 feet at Supply.

COST OF CONSTRUCTION: \$161,047 Federal.
23,505 Contributed.

*See descriptions listed under continuing Authority-Small Navigation Projects, page 55p.

**On December 20, 1983, OCE approved termination of any further construction activity for the Lockwoods Folly Inlet, N.C., project be suspended until suitable equipment becomes available and that the project be maintained at an 8-foot depth in the interim.



TYPICAL SECTION

LOCKWOODS FOLLY RIVER,
NORTH CAROLINA

SCALE OF MILES

CORPS OF ENGINEERS
MAP REVISED SEPT. 1983

WILMINGTON, N.C.

NEUSE RIVER, NORTH CAROLINA

Condition of Improvement, September 30, 1978

Acts	Work authorized	Documents
June 18, 1878	A channel, 5' deep at low stage, to Goldsboro; 3' deep at dead low water, to Smithfield	AR, 1879, p. 708
June 13, 1902	A channel, 8' x 300', to New Bern, thence 200' wide, at New Bern	HD 317/54/2, and AR, 1897, p. 1427
**Jan. 21, 1927	A channel, 12' x 300', to New Bern	HD 299/67/2
Oct. 15, 1965 Sec. 107 July 14, 1960	*10' x 120' channel from railroad bridge at New Bern to a point about 3 miles upstream	Detailed Project Report, Nov 30, 1980
Aug. 4, 1969 Sec. 107 July 14, 1960	*6' x 60' entrance channel from bridge over Dawson Creek to deep water in Neuse River	Detailed Project Report, March 22, 1968

PROJECT: A channel, 12 feet deep, 300 feet wide, from a point 10 miles below, up to and in front of New Bern; *a channel, 10 feet deep, 120 feet wide, from the railroad bridge at New Bern to about 3 miles upstream, thence 4 feet deep at dead low water to Kinston; and during 9 months of the year, 3 feet deep at dead low water to Smithfield, to be obtained by dredging and snagging; a channel, 6 feet deep, 60 feet wide, from the bridge over Dawson Creek to deep water in Neuse River.

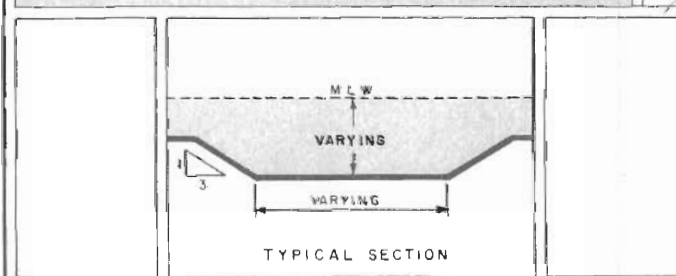
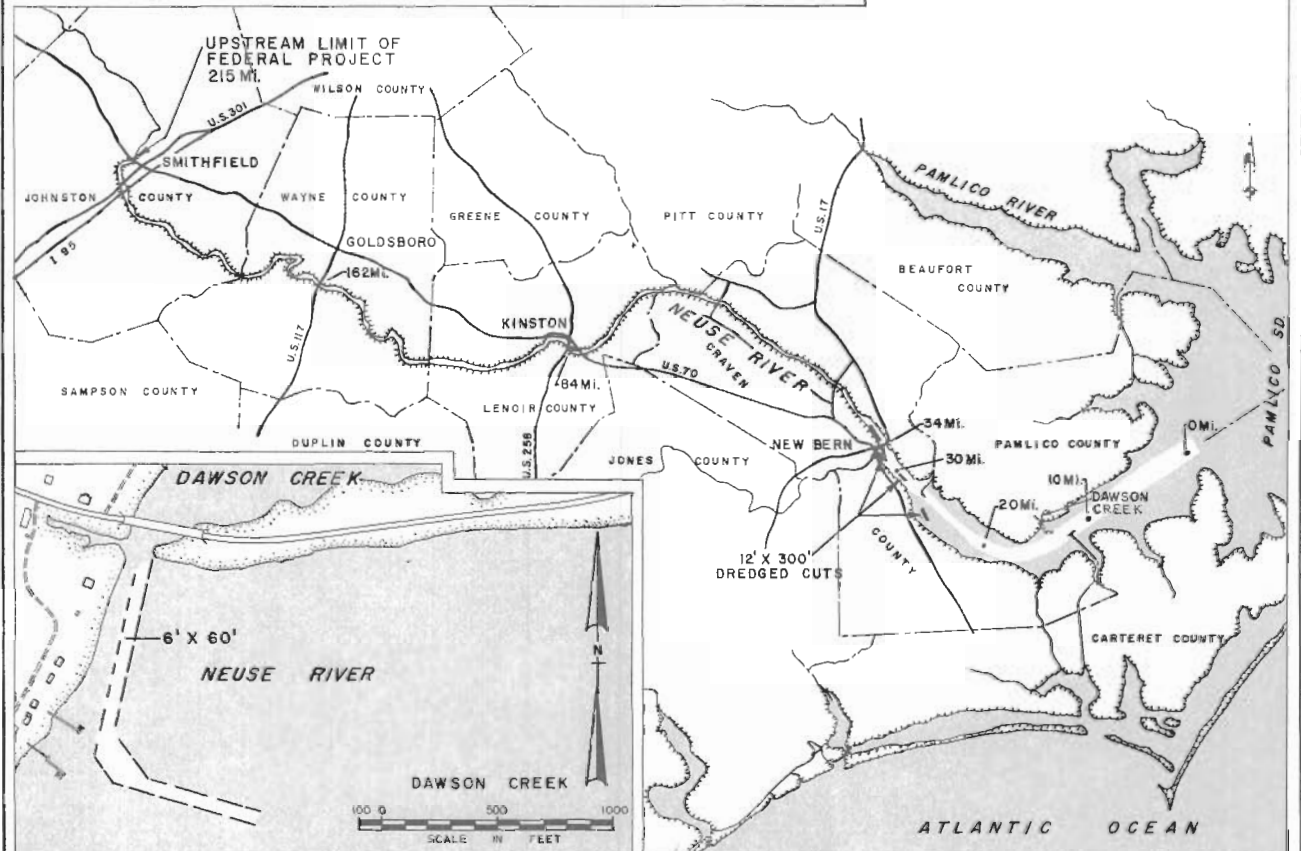
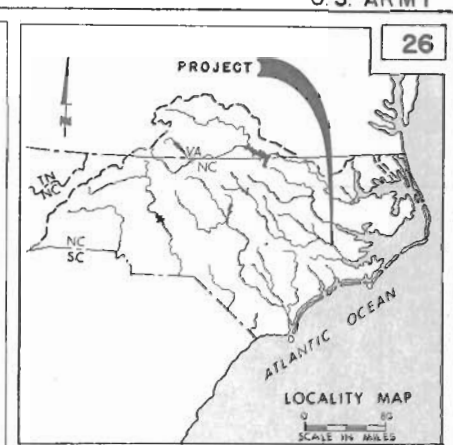
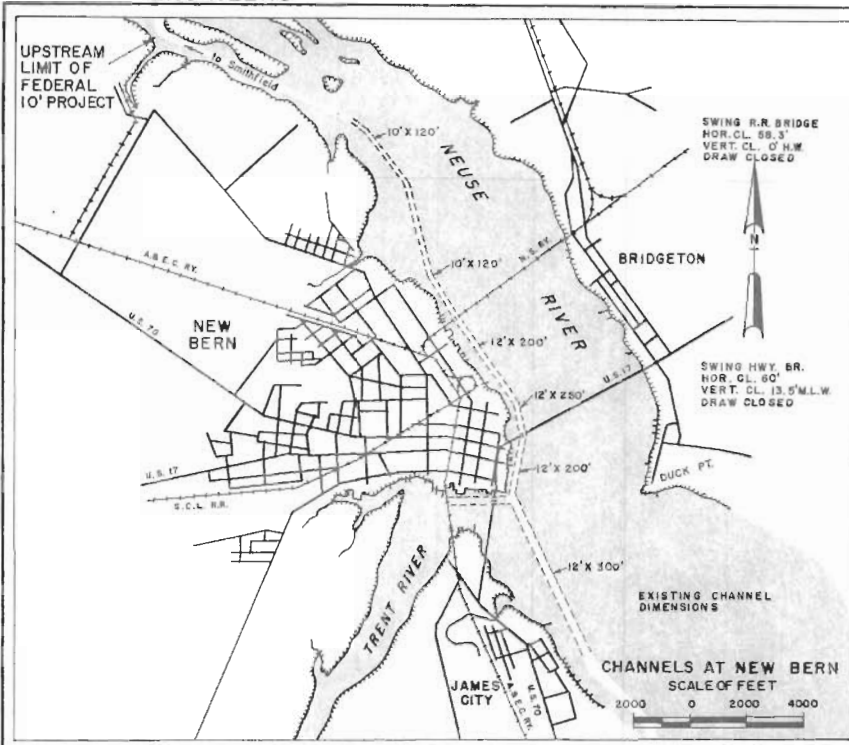
PROGRESS: Except for the 12' x 120' channel to Streets Ferry, the project is complete to the practicable limit. The portion of the project from a point 9 miles above the railroad bridge at New Bern to Smithfield is impracticable to obtain and maintain by dredging and snagging.

VARIATION OF WATER SURFACE: Nontidal. Variations are due to winds.

COST OF CONSTRUCTION: \$460,523.

*See Neuse River listed under Continuing Authority - Small Navigation Projects, page 55g.

**300 feet wide channel at New Bern, deauthorized August 5, 1977.



CORPS OF ENGINEERS
MAP REVISED JUNE 1972

WILMINGTON, N.C.

PAMLICO & TAR RIVERS, NORTH CAROLINA
Condition of Improvement, June 30, 1973

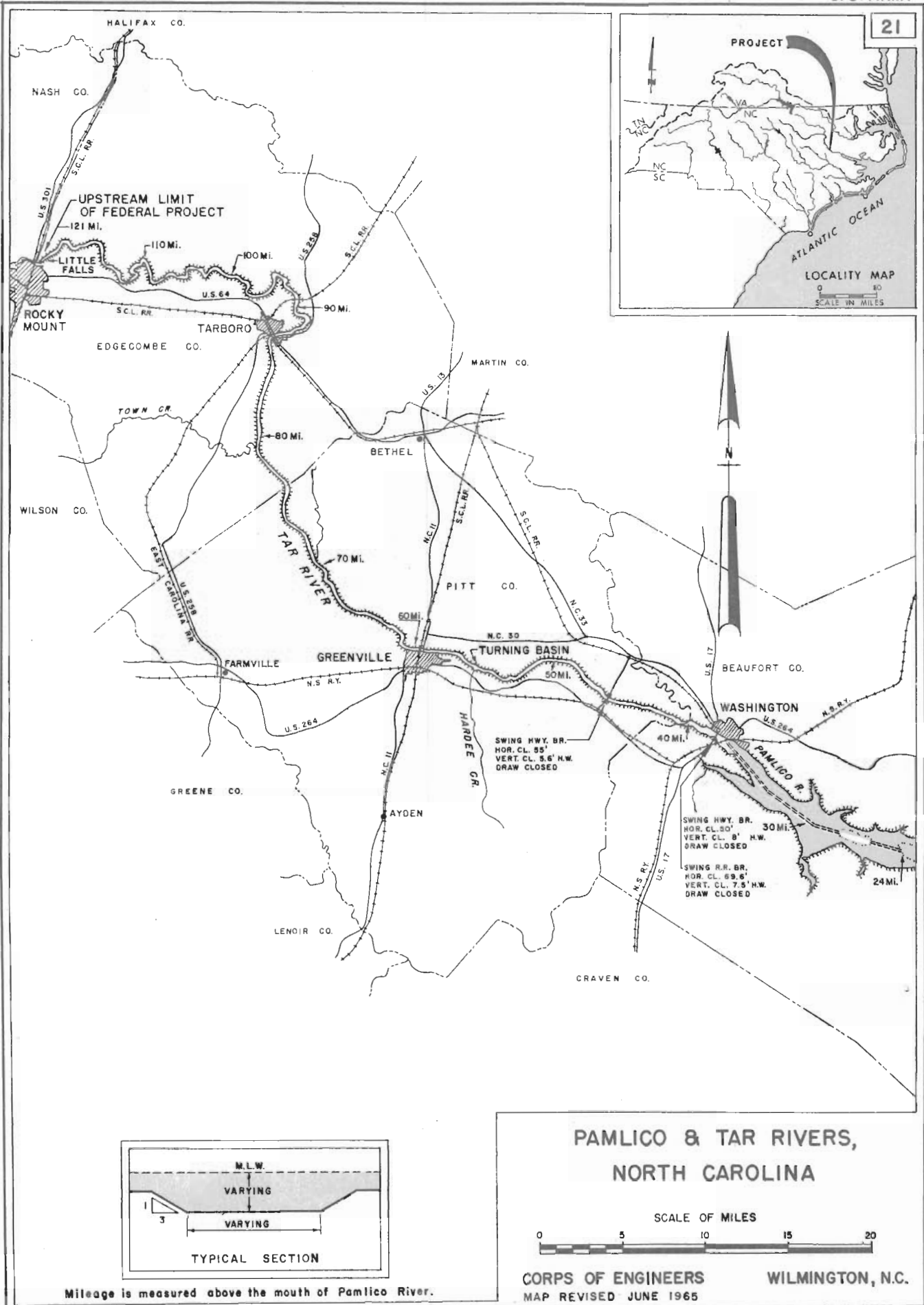
Acts	Work authorized	Documents
Aug. 4, 1876	9' x 100' channel to Washington	HD 68/45/3, and AR, 1879, p. 700
Mar. 3, 1879	Clearing the channel to Tarboro	Ex. Doc. 68/45/3
Aug. 11, 1888	Clearing the channel between Tarboro and Little Falls (Rocky Mount)	AR, 1889, p. 1130
Mar. 2, 1907	4' x 60' channel between Washington and Greenville	HD 342/59/2
July 25, 1912	10' x 200' channel from the mouth to Washington, thence 6' x 75' to Greenville	HD 270/62/2
July 3, 1930	Present 12' project to the SCL RR bridge at Washington	R&H Com. Doc. 11/71/1
Aug. 26, 1937	Present 12' project from Washington to a basin in Hardee Creek	R&H Com. Doc. 22/75/1

PROJECT: A channel, 12 feet deep, 200 feet wide, to the SCL RR bridge, now removed, at Washington; 12 feet deep, 100 feet wide, from Washington to a basin, 200 feet wide and 300 feet long, in Hardee Creek; 6 feet deep, 75 feet wide, to Greenville; 20 inches deep, 60 feet wide, to Tarboro; thence to clear the natural channel above Tarboro to Little Falls.

PROGRESS: Complete.

VARIATION OF WATER SURFACE: Nontidal. Variations at Washington, due to winds, seldom exceed 2 feet. The extreme range of the flood or freshet stage for the upper section is 34 feet at Tarboro.

COST OF CONSTRUCTION: \$674,651.



ROANOKE RIVER, NORTH CAROLINA
Condition of Improvement, September 30, 1987

Acts	Work authorized	Documents
Mar. 3, 1871	Improvement of river between mouth and Weldon	SD 23/42/2, and AR, 1872, p. 726
July 3, 1930	Entrance channel, 10' x 150'	HD 211/70/1
June 20, 1938	Present project dimensions	HD 694/75/3

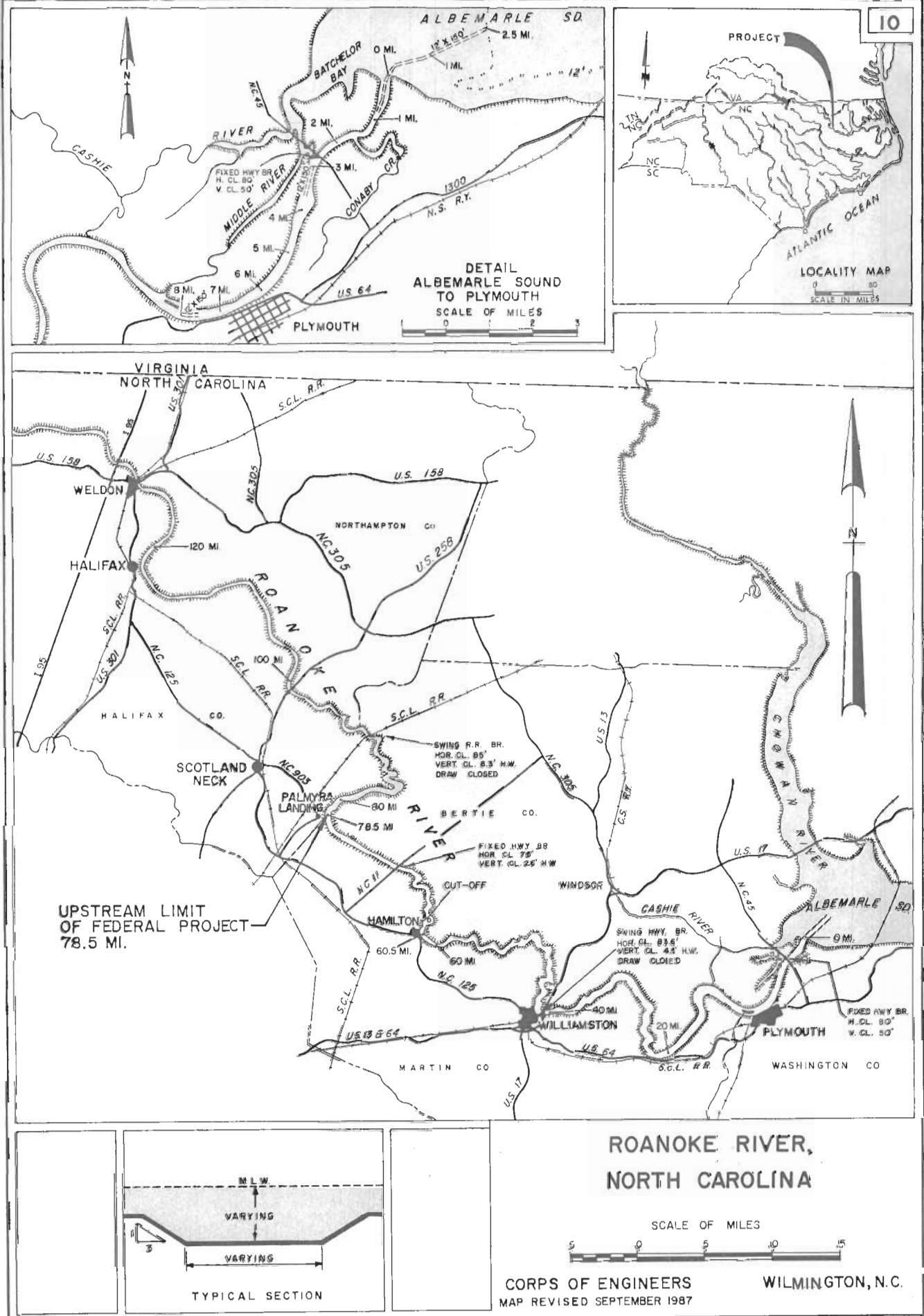
*PROJECT: A channel, 12 feet deep, 150 feet wide, from the 12-foot contour in Albemarle Sound into Roanoke River and thence upstream to a point about 1 mile above the town of Plymouth, N.C., 10 miles; thence a channel, 10 feet deep, 100 feet wide, to Hamilton, 53 miles; thence a channel, 8 feet deep, 80 feet wide, to Palmyra Landing, 18 miles, with a cutoff channel of like dimensions about 2 miles above Hamilton; thence a channel, 5 feet deep, 50 feet wide, to Weldon, N.C.; 50 miles, by dredging, snagging, and regulation.

PROGRESS: Complete, except for portion above Palmyra Landing which has been deferred for restudy.

VARIATION OF WATER SURFACE: The river is subject to freshets, and rises and falls from 10 to 26 feet at Weldon, 5 to 26 feet near Scotland Neck, and 4 to 11 feet at Williamston; however, this fluctuation diminishes toward the mouth, the variation in water levels being from 1 to 2 feet in the lower 10 or 15 miles.

COST OF CONSTRUCTION: \$404,584.

*Channel from Palmyra Landing to Weldon was deauthorized Nov. 17, 1986.



SHALLOTTE RIVER, NORTH CAROLINA

Condition of Improvement, June 30, 1973

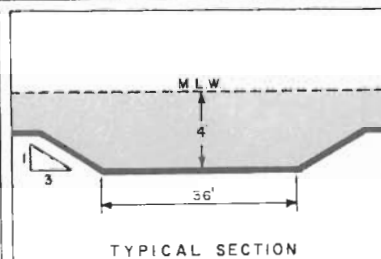
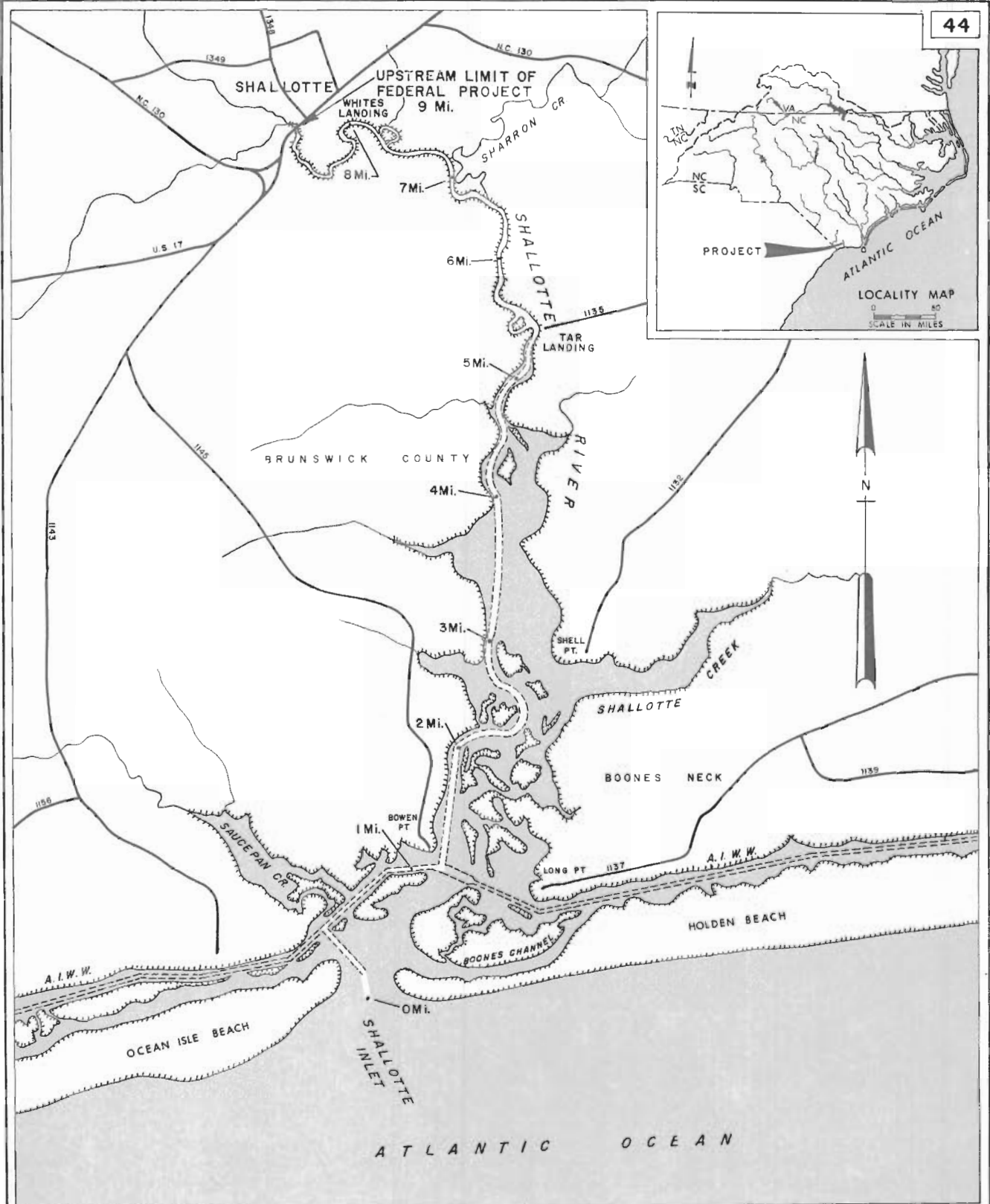
Acts	Work authorized	Documents
Mar. 4, 1913	4' x 36' channel to Whites Landing	HD 721/62/2
Jan. 21, 1927	Extension of channel to Shallotte	HD 273/69/1

PROJECT: A channel, 4 feet deep, 36 feet wide, from the mouth to the town of Shallotte.

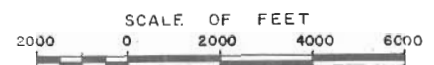
PROGRESS: Complete.

VARIATION OF WATER SURFACE: Tidal. Mean range is about 5 feet at the mouth to 3 feet at the town of Shallotte.

COST OF CONSTRUCTION: \$18,181.



SHALLOTTE RIVER, NORTH CAROLINA



CORPS OF ENGINEERS
MAP REVISED SEP 1979

WILMINGTON, N.C.

TRENT RIVER, NORTH CAROLINA
Condition of Improvement, September 30, 1977

Acts	Work authorized	Documents
June 13, 1902	8' at dead low water at New Bern	HD 121/56/2
Do	Channel, 6' deep at dead low water, over Foy's Flats	Joint Resolution No. 22, approved Mar. 4, 1907
June 25, 1910	4' navigable depth to Trenton	HD 1471/60/2
Jan. 21, 1927	12' x 300' channel at New Bern	HD 299/67/2

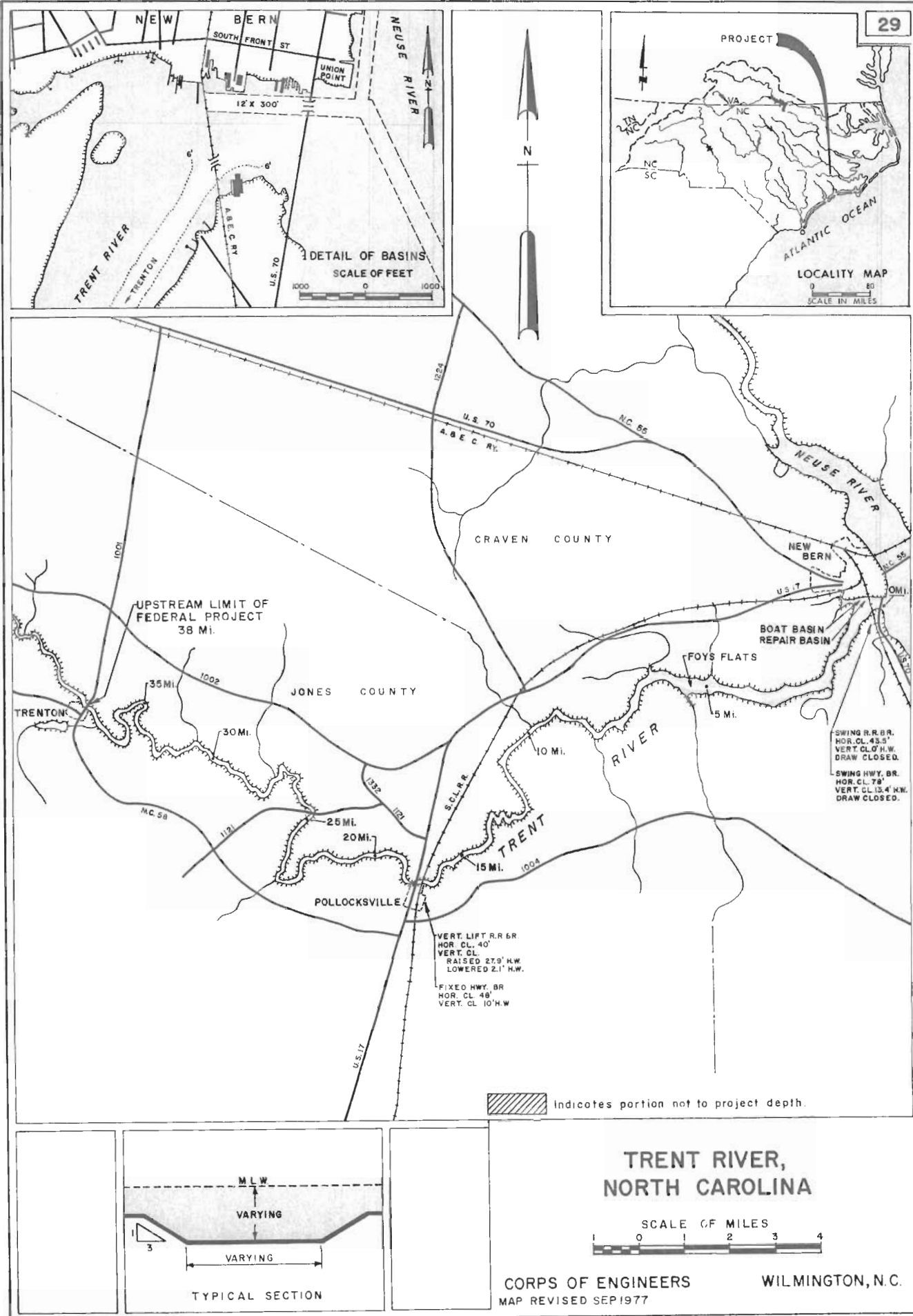
PROJECT: A channel, 12 feet deep, 300 feet wide, in front of New Bern; a channel, 6 feet deep at dead low water, over Foy's Flats; a channel, 50 feet wide, 4 feet deep at low water, to Trenton.

PROGRESS: Complete.

VARIATION OF WATER SURFACE: Nontidal. Variations are due to winds.

COST OF CONSTRUCTION: \$115,199.

*Constructed to 200'.



APPENDIX B

**Memorandum of Understanding Between U.S. Army Corps of Engineers
Wilmington District, U.S. Coast Guard Marine Safety Office,
Wilmington and U.S. Coast Guard Group, Fort Macon, North Carolina**

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT CORPS OF ENGINEERS
PO BOX 1890
WILMINGTON, NORTH CAROLINA 28402

CESAW-OP-N

Operations Division
Plant Section

MEMORANDUM OF UNDERSTANDING BETWEEN US ARMY CORPS OF
ENGINEERS, WILMINGTON DISTRICT, US COAST GUARD MARINE
SAFETY OFFICE, WILMINGTON AND US COAST GUARD GROUP
FORT MACON

1. Purpose. To provide Procedures for identifying responsibility for and removal of floating debris with the Wilmington District navigable waters.
2. Applicability. This regulation applies to the Wilmington District Floating Plant, as well as US Coast Guard Marine Safety Office, Wilmington and US Coast Guard, Group Fort Macon.
3. Definition. Floating Plant. Debris boat SNELL assigned to Wilmington District.

Coast Guard Marine Safety Office Wilmington has two small boats, the CG21545 and CG152004, which operate under the Waterways Management Division.

Coast Guard Group Fort Macon has numerous Search and Rescue (SAR) stations throughout the region. Each SAR station has numerous small boats ranging from 21 to 47 feet.

4. Procedures.

a. Identification of Debris. Floating debris identified by US Coast Guard personnel or US Army Corps of Engineers personnel and deemed as a hazard to navigation.

b. Debris Removal. Debris deemed as a hazard to navigation will be secured to the bank or other structure and clearly marked or buoyed to prevent damage to passing vessels. The team locating the object will relay the nature of the debris, location, size, etc. to the Master of the debris boat SNELL. Applicable phone numbers are enclosed. The SNELL Master will determine upon notification if the object is within a reasonable response time for the SNELL. If it is within a reasonable response time, the SNELL will respond to the area and remove the object. If it is determined that the SNELL cannot respond in a reasonable amount of time, the Coast Guard will attempt to temporarily secure it. If that is not possible, the SNELL Master will notify the local towing service to retrieve the object and secure it at a location to be determined by the Master. After the object is secured, the SNELL will remove it at the next available opportunity.

c. Applicable phone numbers for US Army Corps of Engineers personnel associated with the debris removal program are:

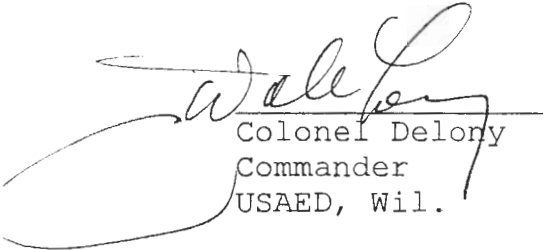
William Cuthrell, Master SNELL
910-617-5016 SNELL
910-617-8621 Portable Cell, COE
252-728-4913 Residence
252-728-0121 Personal Cell

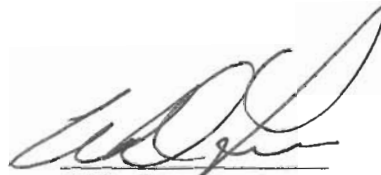
d. If the hazard creates an emergency situation, also contact:

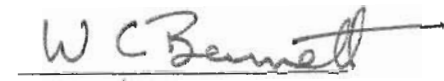
Port Captain USAED
910-251-4983 Wilmington Office
910-617-8337 Cell

5. This MOU does not affect any pre-existing or independent relationships or obligations between the US Army Corps of Engineers and the US Coast Guard.

6. This MOU shall become effective when signed by the US Corps of Engineers and the US Coast Guard.


Colonel Delony
Commander
USAED, Wil.


CDR Lee
Commander
USCG Group
Fort Macon


Captain Bennett
Commanding Officer
USCG, MSO Wil.

Date 24 Jan 01

18 Dec 00

JAN 05 2001

APPENDIX C

Scoping Comments



North Carolina Department of Administration

Michael F. Easley, Governor

Gwynn T. Swinson, Secretary

September 10, 2003

Mr. Stacy Samuelson
U. S. Army Corps of Engineers
Wilmington District
PO Box 1890
Wilmington, NC 28402-1890

Dear Mr. Samuelson:

Re: SCH File # 04-E-0000-0033; Scoping; US Army Corp of Engineers proposes to remove debris and hazards from navigation channels that may prevent/hamper passage of transiting vessels.

The above referenced environmental impact information has been submitted to the State Clearinghouse under the provisions of the National Environmental Policy Act. According to G.S. 113A-10, when a state agency is required to prepare an environmental document under the provisions of federal law, the environmental document meets the provisions of the State Environmental Policy Act. Attached to this letter for your consideration are the comments made by agencies in the course of this review.

If any further environmental review documents are prepared for this project, they should be forwarded to this office for intergovernmental review.

Should you have any questions, please do not hesitate to call.

Sincerely,

A handwritten signature in dark ink, appearing to read "Chrys Baggett".

Ms. Chrys Baggett
Environmental Policy Act Coordinator

Attachments

cc: Region O

Mailing Address:
1301 Mail Service Center
Raleigh, NC 27699-1301

Telephone: (919)807-2425
Fax (919)733-9571
State Courier #51-01-00
e-mail Chrys.Baggett@ncmail.net

Location Address:
116 West Jones Street
Raleigh, North Carolina



North Carolina Department of Environment and Natural Resources

Michael F. Easley, Governor

William G. Ross Jr., Secretary



MEMORANDUM

TO: Chrys Baggett
State Clearinghouse

FROM: Melba McGee *[signature]*
Project Review Coordinator

RE: 04-0033 Scoping for proposed Corps of Engineers clearing and snagging project

DATE: September 4, 2003

The Department of Environment and Natural Resources has reviewed the proposed project. The attached comments are a result of this review. More specific comments will be provided during the environmental review process.

Thank you for the opportunity to respond. If during the preparation of the environmental document, additional information is needed, the applicant is encouraged to notify our respective divisions.

Attachments

1601 Mail Service Center, Raleigh, North Carolina 27699-1601
Phone: 919-733-4984 \ FAX: 919-715-3060 \ Internet: www.enr.state.nc.us/ENR

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North Carolina Department of Cultural Resources
State Historic Preservation Office

David L. S. Brook, Administrator

Michael F. Easley, Governor
Lisbeth C. Evans, Secretary
Jeffrey J. Crow, Deputy Secretary

Division of Historical Resources
David J. Olson, Director

August 28, 2003

TO: *W. Coleman Long*, Chief
Planning and Environmental Branch
Army Corps of Engineers, Wilmington District

FROM: David Brook *for David Brook*

SUBJECT: Clearing and snagging in federal project areas, CH 03-2106, Multi-county

We have reviewed information concerning the above project from the State Clearinghouse.

The Underwater Archaeology Branch staff feel that important submerged cultural resources may be affected during this proposed snagging and clearing project. This is based on historical research that indicates that the remains of numerous ships and other cultural materials lie within the submerged waters of the state.

While the nature and extent of the bottom disturbance caused by the snagging operation does not support recommendations for an archaeological survey, we would like your agency, the applicant, and the equipment operator to be aware that the possibility exists this work may encounter submerged archaeological remains. In the event that such occurs, work should move to another area and the Underwater Archaeology Branch be contacted immediately (910/458-9042). A staff member will be sent to assess the wreckage and determine the proper course of action.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act of 1966 and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763. In all future communication concerning this project, please cite the above referenced tracking number.

Cc: State Clearinghouse

www.hpo.dcr.state.nc.us

	Location	Mailing Address	Telephone/Fax
ADMINISTRATION	507 N. Blount St., Raleigh NC	4617 Mail Service Center, Raleigh NC 27699-4617	(919) 733-4763 • 733-8653
RESTORATION	515 N. Blount St., Raleigh NC	4613 Mail Service Center, Raleigh NC 27699-4613	(919) 733-6547 • 715-4801
SURVEY & PLANNING	515 N. Blount St., Raleigh NC	4618 Mail Service Center, Raleigh NC 27699-4618	(919) 733-6545 • 715-4801



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Raleigh Field Office
Post Office Box 33726
Raleigh, North Carolina 27636-3726

September 2, 2003

Colonel Charles R. Alexander
District Engineer, Wilmington District
U. S. Army Corps of Engineers
P. O. Box 1890
Wilmington, NC 28402-1890

RECEIVED
EXECUTIVE OFFICE
2003 SEP . 3 P 5:45

Attention: Mr. Stacy Samuelson, Environmental Resources Section

Dear Colonel Alexander:

This letter responds to the July 31, 2003, letter of Mr. Coleman Long requesting comments from the U.S. Fish and Wildlife Service (Service) on proposed clearing and snagging operations for the removal of debris and hazards from navigation channels that may prevent/hamper safe passage of transiting vessels. The letter identifies 11 waterways or portions of a waterway for these operations. One waterway is the Atlantic Intracoastal Waterway (AIWW). Three rivers (Lockwoods Folly, Shallotte, and Pasquotank) are included without a mention of specific sections. Work in the remaining seven rivers (Cape Fear, Cashie, Chowan, Neuse, New, Tar/Pamlico, and Roanoke) would be limited to reaches below a specified community. These comments are provided in accordance with provisions of the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. 661-667d) and section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543). These early scoping comments do not constitute the report of the Department of the Interior as required by Section 2(b) of the FWCA.

The letter states that the Wilmington District, U. S. Army Corps of Engineers, (Corps) is proposing to prepare an Environmental Assessment (EA) for these operations. The proposed clearing and snagging operations are generally conducted from a snagboat while operating within the river channel or waterway. Snagging consists of the removal of objects in the navigation channel such as snags, trees, log jams, and debris. Overhanging or leaning trees that are in danger of obstructing navigation may also be removed. Wood debris removed by the snagboat would be placed within 50-75 feet of the streambank or on the high bank of the waterway. No channel excavation work, i.e., the removal of sediment, is associated with this proposed work. These operations have historically been conducted throughout the year. Some areas require infrequent clearing and snagging.

In ecological literature the material to be removed is variously referred to as large organic debris, large woody debris (LWD), or coarse woody debris (CWD). Such debris includes logs, tree tops, limbs, stems, roots, leaf mats, and whole trees. These comments will refer to such material as

LWD, the term used by Treadwell (2002). A major component of LWD is the snag which we define as a whole tree, tree limb, and/or root mass that is partly or wholly submerged. A snag may be alive, a tree with roots in the waterway bank, or dead. As with other components of the physical environment, different groups of organisms have varying requirements for stream debris and the level of debris occurrence which benefits one group may be detrimental to other groups.

Much of the literature on LWD removal refers to work in streams as opposed to rivers. This may be due, in part, to the fact that navigation in rivers, generally wider and deeper, is less likely to be impacted by LWD. If river navigation channels are located in the deeper central section of a river, trees leaning from the bank or submerged near the bank should have no impact on navigation. The fact that Mr. Long's letter mentions overhanging or leaning trees that may obstruct navigation indicates that some areas covered by the proposed EA may require the same considerations as "streams." These comments may not be applicable to each and every waterway reach to be covered in the EA. We realize that areas such as the Neuse River below New Bern and the Cape Fear below Wilmington are very wide. However, land cuts of the AIWW may be only 90 feet wide and the upper reaches of the Pasquotank, Shallotte, and Lockwoods Folly Rivers may also have widths which might be considered wide streams rather than rivers. In preparing the EA the Corps should incorporate those recommendations which are appropriate to the given waterway.

Purpose and Need

The removal of LWD may be undertaken to ensure safe navigation, improve stream flow, reduce flooding, improve recreation, and facilitate in-stream mining for such materials as sand and gravel. The purpose of a LWD removal effort influences the geographic scope of the work, the equipment that can be used, and scheduling constraints. While the proposed EA may provide a generic purpose for LWD removal in all 11 waterways, it may be necessary to define the specific purpose for work in each waterway to include the authorized dimensions of the navigation channel and the vessels using the specified reach.

The forthcoming EA should discuss a major dichotomy among these operations, i.e., emergency versus routine work. The EA should define the conditions that would necessitate emergency removal of LWD. If the Corps proposes a specific schedule for routine work, e.g., work every three years, this schedule should be presented. If work schedules are expected to vary from area to area, this should be discussed in the EA.

The purpose and need discussion should address the factor(s) that determine the upstream limit of debris removal. This should include a discussion of the amount of vessel traffic and the frequency of traffic by vessel size along with the methods or surveys to be used to determine these factors. If the upstream limit for clearing and snagging will be determined by access needs of a vessel of a particular size, this aspect of the project should be discussed along with the frequency at which the navigation needs will be reassessed.

Alternatives

Based on the purpose for debris removal within a specified waterway, there should be an evaluation of alternatives. If LWD obstructs the navigation channel, a series of options should be considered to enhance navigation. Trimming only the parts of a snag needed to clear the channel should be first option with other parts of the snag being left in place. The second option should be the movement or realignment of the snag away from the navigation channel. For example, if both the trunk and limbs extend into the navigation channel, the trunk should be “hinged.” This process involves cutting the trunk approximately 75% through near the root wad and then bending the trunk to lie between 45 degrees and parallel to the bank. Any obstructing limbs should be cut and removed. The remaining parts of the tree should be left in the waterway. A third options would be to move the entire snag to a different part of the waterway where it can be located outside the desired navigation channel. Complete removal of the snag should be the final option. More specifically, the EA should discuss:

1. The type(s) of equipment that would be used. This discussion should compare the efficiency of a snagboat that moves debris to a new location with small-scale, land-based operations that use chain saws to clear the navigation channel and leave the debris within the waterway, but outside the navigation channel;
2. The extent of preemptive removal of LWD that may be conducted. Preemptive removal refers to the extent that LWD, either live or dead, that is not actually in the navigation channel would be removed, because it is considered to have the potential to become a navigation obstruction;
3. The times of years during which routine removal operations would be undertaken;
4. The range of disposal sites that would be used and any restrictions on the disposal of the material removed, e.g., a prohibition against placement in wetlands or the methods to be used to ensure compliance with legally designated buffer zones; and,
5. The procedures for identifying and obtaining permission from riparian landowners to remove trees from and/or place debris on their property. These procedures should address measures for work on land protected by formally recorded conservation easements and other special management areas such as National Wildlife Refuges, National Forests, State Parks, and State Wildlife Management Areas.

Habitat Values of Large Woody Debris

Debris in waterways affects the physical characteristics of the waterway and the diversity and abundance of its aquatic organisms (Natural Resources Conservation Service 1999, p. E-11). The Massachusetts Adopt-A-Stream Program states (Massachusetts Riverways Programs; available at < <http://www.state.ma.us/dfwele/river/rivSnags.htm> > accessed 8-20-2003) that

waterway snags are as important to river systems as pools and riffles and are a “critical part of maintaining ecological balance.” Snags within waterways:

1. Provide habitat variety to the stream which promotes diversity and abundance of species;
2. Trap silt and sand and buffer the stream against rapid changes in sediment loading, protecting rearing pools, spawning gravel, and riffles;
3. Provide access into and out of the water for insects, snakes and amphibians and provide perches for mammals and birds using the stream for foraging. For example, snags provide a feeding station for mammals such as the mink (*Mustela vison*), river otter (*Lutra canadensis*), and birds such as the belted kingfisher (*Megaceryle alcyon*).
4. Provide shelter by creating shade from the sun;
5. Provide fish with cover from predators;
6. Create a substrate where plants grow and add oxygen to the stream;
7. Alter the flow regime by slowing down a portion of the stream flow and causing flow at an adjacent point to move faster. This creates good habitat for certain fish;
8. Separate the river bottom into corridors for separate river users, allowing fish to be undisturbed by recreational boaters;
9. Provide an important element in the food chain by increasing the number of invertebrates and adding organic matter to the stream;
10. Slow down the flow of water and act as buffers to protect the banks from erosion; and,
11. Support recreation: fishermen find snags excellent sites for fishing.

Treadwell (2002) elaborates on the value of LWD in the food chain of Australian streams. He notes that submerged wood, with a complex of surface structures of grooves, splits, and holes, provides space for colonization by a range of invertebrates, microbes, and algae. Some invertebrates feed directly on the wood while others graze the biofilm, the community of microbes and algae. The bacterial and fungal components of the biofilm contribute to the decomposition of the wood substrate and thus contribute to the supply of dissolved and particulate organic matter in the waterway. Organic matter is a major food source for invertebrates and fish. The photosynthetic activity of the algal component of biofilm may produce a significant amount of food for higher levels of the food chain. Invertebrates and some fish eat the algae growing on the wood.

Snags provide food and shelter to a variety of fish. From the perspective of a writer in Tennessee (Smith 1993) many types of minnows (Family Cyprinidae) and darters (Family Percidae) occupy niches in and around snags. While snag shelters these small species of fish, they also concentrate small fish and make the snag a desirable feeding station for larger fish such as largemouth bass (*Micropterus salmoides*). Depending upon whether the snag is well-flushed by stream flow or is sufficiently large to generate a slack eddy or pool, other species such as bluegills (*Lepomis macrochirus*), perch (Family Percidae), crappie (*Pomoxis* spp.), and bottom feeders such as the suckers (Family Catostomidae) may be present in and around the snag. The black crappie (*Pomoxis nigromaculatus*) is usually found around underwater logs and broken tree tops (Rohde et al. 1994, p. 175). Smith (1993) notes that four or five species of fish may sometimes utilize a single snag and there may be a distinct zonation in the types of fish present from side to side and top to bottom.

Hoover and Killgore (1998) discuss the fish communities of southern forested wetlands. They note that fish may be divided into four groups with a characteristic body form that is associated with distinctive behavior and habitat preferences. One group known as the “maneuverers” is characterized as deep-bodied and compressed with symmetrical dorsal-ventral contours and large paired fins situated anteriorly. Most maneuverers are found near submersed wood and vegetation at mid-depth (Hoover and Killgore, 1998, p. 245). This group includes the flier (*Centrarchus macropterus*) and dwarf sunfish (Hoover and Killgore 1998, p. 244). In waterways of the North Carolina coastal plain, small sunfish include the banded sunfish (*Enneacanthus obesus*), bluespotted sunfish (*E. gloriosus*), and blackbanded sunfish (*E. chaetodon*) (Rohde et al 1994, pp. 164-165).

Removal of LWD may adversely impact the striped bass (*Morone saxatilis*) and other anadromous fish including American (*Alosa sapidissima*) and hickory (*A. mediocris*) shads as well as alewife (*A. pseudoharengus*) and blueback herring (*A. aestivalis*), the latter two species are collectively known as river herring. The striped bass and American shad are important anadromous game fishes. The river herrings are significant forage species. The North Carolina Wildlife Resources Commission (NCWRC), North Carolina Division of Marine Fisheries (DMF), Service, and NOAA Fisheries (formerly the National Marine Fisheries Service) are working to restore these species to former levels of abundance. Downed trees are especially important as shelter areas (Rohde et al 1994, p. 159) and feeding areas for adult striped bass during their spawning run. Downed trees and snag assemblages may also constitute important resting areas for migrating shads and river herrings, as well as constituting potential spawning habitat for the herrings and hickory shad. The redbreast sunfish (*Lepomis auritus*) inhabits the North Carolina coastal plain and is totally dependent upon snags for spawning sites (Davis 1972 as cited in U. S. Fish and Wildlife Service 1992, p. 73).

When a snag enters the water, it immediately alters the flow of the stream and generates several forms of stream turbulence (Smith 1993). This turbulence is important not only for its effects in allowing fish to capture food, but also for its eventual effects in allowing, as discussed above, the snag itself to generate food. Turbulence is simply the manifestation of differences in water flow.

With respect to the load of silt carried in the stream flow, turbulence causes an alteration in the hydrologic competency of the stream, i.e., the largest particle the stream can transport. Increasing or decreasing stream competency depends on whether the flow speeds up or slows down. Some parts of the snag will always cause the stream flow locally to exhibit reduced competency. In such areas surrounding the snag, material such as silt, sand, gravel and particulate organic matter carried in the flow will lose their downstream momentum and fall to the bottom, often in a very definite vertical and longitudinal gradient of type, size, and shape.

As a snag causes large particles to fall out of the river flow, it contributes locally to building the stream bottom (Smith 1993). This effect is important for several reasons. First, the accumulated substrate contains not only mineral sediment, but fragments of twigs and leaves, as well as semi-dissolved solids from the decay of organic materials and some chemical precipitates. These materials form the bottom of the food chain. Secondly, the physical characteristics of the sediment and the shape of particular particles in the mix provide the physical substrate to protect primary organic processes as well as shelter and points of attachment for the first phyto- and zooplankton to be generated on and around the snag. Algae, mosses, and grasses soon begin to develop on this substrate and are the critical link in the production of oxygen within the stream. These plants provide organic matter to the food chain, additional physical alterations in the chemistry and character of the water, and additional shelter to members of the aquatic community. As larger invertebrates colonize the site, the coarser bottom particles along with the algae and grasses also provide shelter and sites for attachment. At this point the generation of a locally complex food chain is well underway, and the structure of snags supports the development of a faunal community.

The importance of snags in low gradient streams on the coastal plain of Georgia has been reported (Benke et al. 1985, as cited in Natural Resources Conservation Service [hereafter NRCS] 1999, p. E-12). Invertebrate diversity, biomass, and production were much greater on snags than on either sandy or muddy bottoms. Snags supported 60 percent of total invertebrate biomass and 16 percent of secondary production for the sampled stretch of river. Sampling at night showed that about 78 percent of drifting invertebrates came from snags. Fish stomach sampling showed four of eight major fish species obtained at least 60 percent of prey biomass from snags. These authors concluded that clearing and snagging operations in such streams may be devastating to invertebrates and dependent fish species.

As noted, snags also provide a feeding station for piscivorous mammals and birds. The presence of birds and mammals around snags indicates that the influence of these structures extends beyond the riverbanks. River snags provide a location for basking by turtles. Species such as the painted turtle (*Chrysemys picta*), spotted turtle (*C. guttata*), and yellowbelly slider (*C. scripta*) are fond of basking, especially in the early spring. Basking allows turtles to increase their internal body temperature and is also essential to proper nutritional health and shell growth. Basking on woody debris extending out of the water allows turtles to quickly return to the water.

Riparian areas which may be used for debris disposal may be used as nesting sites by a variety of birds. Colonial waterbirds which may nest in forested areas along North Carolina coastal rivers

included the great blue heron (*Ardea herodias*), anhinga (*Anhinga anhinga*), and great egret (*Casmerodius albus*). The Federally threatened bald eagle (*Haliaeetus leucocephalus*) and neotropical migrants may also nest along waterways.

Environmental Consequences of Clearing and Snagging and Resources Impacted

In general, clearing and snagging operations can create four physical modifications to a waterway (Table 1). These are: (1) decrease hydraulic roughness of the stream channel; (2) removal of canopy; (3) changes in stream substrate; and, (4) removal of snags, logs, and shoreline vegetation. Each operation may not produce all four types of modification. There may be some minor overlap among the four major types of physical modification. However, decreased hydraulic roughness (A in Table 1) appears to relate to the influence of snags on water movement. Changes in stream substrate (C in Table 1) relates to the snag as a component of the waterway bottom. The actual removal (D in Table 1) of organic matter relates to the structural values in and above the water column.

An interagency study group representing 15 Federal agencies identified 32 potential direct and 19 potential indirect environmental consequences of “woody debris removal.” (Federal Interagency Stream Corridor Restoration Working Group [hereafter FISRWG] 1998, Table 3.3). Aside from the direct loss of fish and wildlife habitats, some of the more important potential direct impacts include: (1) increased levels of fine sediment and contaminants in the stream corridor; (2) channel widening and downcutting; (3) reduced stream capacity to assimilate nutrients/pesticides; (4) increased bank failure; (5) increased exposure to solar radiation, weather, and temperature extremes; (6) impaired aquatic diversity; (7) reduced instream oxygen concentration; and, (8) reduced species diversity and biomass.

Rare and Protected Species in the Study Area

It is difficult to provide precise guidance on the Federally protected species that could be affected by the proposed operations which extend from Shallotte River in the south to Pasquotank River in the north and an area that includes the entire AIWW along the North Carolina coast. Corps planning should consider not only aquatic species that would be impacted by debris removal and the resulting turbidity/sedimentation, but also riparian species that could be impacted by debris placement outside the waterway.

Federally Protected Aquatic Species - Regarding aquatic species, information from the North Carolina Natural Heritage Program (NCNHP) indicates that there are no reported occurrences of Federally listed species under the jurisdiction of the Service in the four northern waterways (Pasquotank, Cashie, Chowan and Roanoke Rivers). However the Federally endangered West Indian manatee (*Trichechus manatus*) has been reported in Albemarle Sound into which these rivers flow and this wide-ranging aquatic mammal may occupy the lower reaches of these rivers. Within the three central waterways (Neuse, New, and Tar/Pamlico) the only Federally listed species under the jurisdiction of the Service reported by the NCNHP is the manatee. Among the

Table. 1. The impacts of clearing and snagging on functional stream ecology. Source: Marzolf 1978 as given in Natural Resources Conservation Service 1999, p. E-13.

Physical Modification	Biological Consequences
A. Decrease hydraulic roughness of stream channel	A-1. Moves decomposition of organic matter downstream; A-2. Reduces physical habitat diversity; A-3. Reduces benthic production; A-4. Reduces spawning and nursery habitat; A-5. Reduces fish cover and shelter; A-6. Disrupts fish territoriality and orientation; A-7. Reduces plankton production by reducing amount of quiet water
B. Removal of canopy	B-1. Increases light and stream temperature and encourages growth of benthic algae and macrophyte; B-2. Decreases organic matter input from terrestrial vegetation
C. Changes in stream substrate	C-1. Changes production and kinds of benthic algae and macrophytes; C-2. Changes distribution and species composition of benthic macroinvertebrates
D. Removal of snags, logs, and shoreline vegetation	D-1. Reduces habitat for nest- and case-building macroinvertebrates; D-2. Reduces habitat for accumulation and decomposition of organic matter, resulting in less food for macroinvertebrates; D-3. Reduces diversity and quantity of fish food; D-4. Reduces fish cover and spawning habitat; D-5. Disrupts fish territoriality and orientation

southern waterways (Cape Fear, Lockwoods Folly, and Shallotte Rivers), the proposed range of LWD removal appears to be outside the known range of the Cape Fear Shiner (*Notropis mekistocholas*) and Waccamaw silverside (*Menidia extensa*). However, the operations are proposed for areas known to contain the shortnose sturgeon (*Acipenser brevirostrum*), a Federally endangered fish under the jurisdiction of NOAA Fisheries. The Corps should coordinate with that agency on potential impact this anadromous fish, as well as potential impacts of the proposed work on Essential Fish Habitat (EFH) designated by that agency and the Mid- or South Atlantic Fishery Management Councils in the affected waterways. The manatee may be found in the lower Cape Fear as well and Lockwoods Folly and Shallotte Rivers.

Available information suggests that the proposed operations would be downstream from areas with known occurrences of Federally listed mussels. While the Federally endangered dwarf wedge mussel (*Alasmidonta heterodon*) inhabits creek and river areas with a slow to moderate current and a sand, gravel, or muddy bottom, known occurrences are upstream from the proposed debris removal operations in both the Neuse and Tar River drainages. Similarly, known occurrences of the Tar spiny mussel (*Elliptio steinstansana*) are upstream of the proposed debris removal operations.

The major concern of the Service involves the manatee. Protective measures for the manatee would be required if clearing operations occur in waters that: (1) are over three feet deep; and, (2) have an unobstructed connection via continuous water depths of over three feet to estuarine waters. Manatees have not been reported upstream of Lock and Dam One on the Cape Fear River. The species has been reported as far inland as Greenville in the Tar River and Fort Barnwell in the Neuse River (Schwartz 1995). The NCNHP database shows that manatees have been reported in the AIWW. Observations of manatees from within the lower Cape Fear River and surrounding waters are generally reported every year during the summer months. The number of sightings is usually low, but they do occur within the Cape Fear River on a regular basis during the warmer months of the year (David Webster, University of North Carolina at Wilmington, personal communication, May 1993, and Mary Clark, North Carolina Museum of Natural History, personal communication, May 1993).

The Corps should incorporate the “Guidelines for Avoiding Impacts to the West Indian Manatee” drafted by the Service into project plans. These guidelines are available on our web site at < http://nc-cs.fws.gov/mammal/manatee_guidelines.pdf>.

Federally Protected Riparian Species - The Federally endangered golden sedge (*Carex lutea*) has a range limited to only eight populations in Pender and Onslow Counties, North Carolina. During winter and spring, the plants grow in areas that are subject to shallow flooding. At other times of the year these sites are very wet to saturated. Such areas could occur along the New River below Jacksonville, one of the areas proposed for clearing operations and areas along this river that could serve as disposal areas. The use on any on shore disposal areas in Onslow County should evaluate possible impacts on the golden sedge.

The Federally endangered pondberry (*Lindera melissifolia*), also known as southern spicebush, is associated with wetland habitats such as bottomland and hardwoods in the interior areas, and the margins of sinks, ponds and other depressions in the more coastal sites. Within the last 20 years, the species has been reported in Bladen and Cumberland Counties, an area through which the Cape Fear River flows and debris disposal could occur. Any shore disposal areas for clearing operations along the Cape Fear River in these counties should evaluate possible impacts on this plant.

As noted, the bald eagle may nest and forage along major waterways of the coastal plain. Project plans should ensure that neither snagging nor disposal operations adversely impact the bald eagle.

State Special Status Species - The Corps should assess the impacts of the proposed operations on species having State Special Status (endangered, threatened, special concern, or significantly rare). Information on the species for several of the waterways under consideration can be found in the Basinwide Assessment Reports prepared by the Environmental Sciences Branch of the North Carolina Division of Water Quality (NCDWQ). An index to the available reports can be found on the internet at < <http://www.esb.enr.state.nc.us/bar.html> >. The reports available and their date of release are the Cape Fear Basin (1999), Chowan/Pasquotank Basin (2001), Neuse Basin (2001), Roanoke Basin (2000), and Tar-Pamlico Basin (2003). While the available reports include only six of the ten rivers proposed for debris removal, the information provided is likely to include most of the State Special Status species that could be affected. Additional information on the status and distribution of these species can be found on the Natural Heritage Program List of the Rare Animals of North Carolina located on the internet at < <http://www.ils.unc.edu/parkproject/nhp/publications/animals/animal01.pdf> >.

Examples of State Special Status species include the Neuse River waterdog, or Carolina mudpuppy, (*Necturus lewisi*), an amphibian with a State status of "Special Concern." The species inhabits rivers and large streams within the Neuse and Tar River drainages. On a global scale this species is considered very rare or local throughout its range, or found locally in a restricted area. The Atlantic Sturgeon (*Acipenser oxyrinchus*), a State Species of Special Concern, inhabits the lower portion of many North Carolina rivers. This anadromous fish spawns from February to May (Rodhe et al. 1994, p. 62). The broadtail madtom (*Noturus* sp.), another fish, is found in the Cape Fear Basin and inhabits the main channel of medium rivers in debris-laden pool. It is a State Species of Special Concern. The least killfish (*Heterandria formosa*) is found in the Lower Cape Fear drainage in standing to slow-flowing waters that are heavily vegetated. It is a State Species of Special Concern and is considered critically imperiled in North Carolina.

FWS Recommendations for Corps Planning

The Service recognizes the need to ensure safe navigation on the rivers under consideration and the AIWW. We support efforts to remove obstacles which impede navigation by vessels

appropriate to the waterway. However, the Corps should acknowledge that LWD is an important component of both aquatic and riparian ecosystems. The removal of such LWD can be detrimental to important fish and wildlife resources. However, it is possible to strike the proper balance between these interests. The Service offers the following recommendations for inclusion in the EA for the proposed clearing and snagging operations:

1. There should be written documentation of an actual navigation or flooding problem for each LWD removal operation. Generally, removal/relocation operations should only be required when LWD forms a major obstruction to a navigation channel or water flow during normal or high water. The statement of purpose should include a description of the type(s) of vessels using the reach, the frequency of use by the larger vessels, and the dimensions of the channel required for these vessels. The upstream limit of each operation should be based on a demonstrated risk to vessels using the uppermost reach of the waterway. There should be a discussion of any work restrictions for special conservation lands along the waterway;
2. There should be a clear distinction between routine LWD removal operations and emergency operations with specific criteria for emergency work;
3. Based on the project purpose, there should be a discussion of alternatives which includes an assessment of: (1) merely cutting limbs and trunks within the desired channel with no removal; (2) pulling LWD out of the desired channel, but leaving it in the waterway adjacent to the channel; and/or (3) moving the LWD to another location within the waterway reach, but outside the desired channel;
4. The optimal time of year to conduct routine debris removal operations would be the four-month period from October 1 through January 31. Work during this period would minimize adverse impacts on sturgeon reproduction, both shortnose and Atlantic which spawn during the February 1 to May 31 period (Rohde et al. 1994, pp. 61-62), as well as spawning by other anadromous species. The period avoid the time (February 15 through September 30) when a variety of fish use primary nursery areas. This work period would also avoid four of the five months (June through October) when manatees are most likely to be in North Carolina waters. This period would also avoid disturbance of colonial waterbird which may nest in riparian areas along the waterways to be cleared;
5. If a barge is used and direct access is impeded, access to the waterway should only be allowed at boat ramps or public road crossings. There should be no clearing of riparian areas for access to the waterway;
6. Live, healthy trees on the waterway bank (and not severely undercut by erosion) should be left in place regardless of the angle of declination from the vertical if they do not extend into or over the actual navigation channel. Similarly, bushes, limbs, and other material hanging in or over the water should not be removed unless they obstruct the specified

- navigation channel. If limbs of live, healthy trees must be removed and the survival of the tree is unlikely, the trunk should be “hinged” as described above to form LWD habitats closer to the bank. Standing dead trees should not be removed unless they are in imminent danger of falling into the waterway. If a tree (either live or dead) must be cut, the root wad should be left in the bank with its natural alignment to provide bank stabilization and fish and wildlife habitat. Large woody debris which is imbedded, jammed, rooted, or waterlogged in areas adjacent to the channel, should not be removed unless the material is subject to displacement by currents. Stumps, trees, or logs that must be removed can be pulled from the channel, but no excavation should be employed;
7. To minimize turbidity, subsequent sedimentation, and the re-suspension of contaminants in bottom sediment, barge operations should be restricted to water depths where propwash would not disturb bottom sediment. Turbidity levels should not exceed the nephelometric turbidity unit (NTU) limit established for the water class by the NCDWQ. Where barges could create detrimental turbidity, work should be done by hand from small boats using chain saws, axes, and other portable equipment;
 8. Large debris placement should not occur in wetlands. Every effort should be made to relocate obstructing debris within the same waterway, but outside the desired channel. If upland placement is required, debris should be placed in a manner that will not impede lateral water flow. The debris should be sufficiently anchored, or stabilized, so that it will not be displaced back into the stream. The Wildlife Society and the American Fisheries Society (1983, Figure 18) note that in small scale relocation of debris, dead trees can be removed from a waterway, pulled onto the floodplain, and positioned to prevent their re-entry into the waterway;
 9. Debris placement within 50-75 feet of the bank would avoid the protected 50-foot riparian buffer zone (established by state law for the Neuse and Tar-Pamlico Rivers). However, plans for the current debris removal operations should ensure that vegetation removal and the transport of material across the riparian buffer comply with State buffer protection rules. The use of “high banks of the river,” mentioned by Mr. Long as possible disposal sites should not adversely impact a natural, riparian vegetative community. There should be no mechanized land clearing associated with debris disposal;
 10. If a chipper is used on the barge to chip the material, the chips should be spread in a uniform manner in the designated disposal area. Chips should not be piled to a thickness that would smother vegetation;
 11. The direct and indirect impacts of each debris removal operation on State and Federally protected species should be determined. This determination should not only consider the aquatic species in the waterway, but also wetland and riparian species in designated disposal areas. Surveys for the presence of non-mobile protected species, e.g., golden sedge, pondberry, nesting bald eagles, may need to be conducted if no recent survey data

are available. The Service's manatee conditions should apply to all operations in areas that could be accessed by manatees;

12. Corps personnel from the Environmental Resources Section or Regulatory Division should periodically and randomly inspect the work area to ensure that all conservation measures are being implemented. If there are deviations from these measures, the Corps representative should be authorized to stop the work immediately; and,
13. The EA should include a notification procedure for State and Federal resource agencies for both emergency and routine operations. Such notification would be similar to that currently used for maintenance dredging operations. For routine work, a Public Notice (PN) should be issued with the purpose and need, location of the proposed work, the time period for the work, and location and description of the disposal sites. For emergency work, the resource agencies should be given either verbal or written notification of the same information. Each PN should contain the Corps' determination of the impact of the work on Federally protected species. The PN should also be sent to organizations owning/managing lands for conservation purposes along the waterway such as land trusts and private conservation organizations. The Service, the NCWRC, NCDMF, NOAA Fisheries, and the NCDWQ should be given an opportunity to inspect the area and work with the Corps on site-specific guidelines for LWD removal. There should also opportunities for these agencies to inspect the work in progress.

Summary

The Service appreciates the opportunity to provide these scoping comments early in your planning effort. We look forward to working with the Corps on the development of these clearing and snagging operations. If you have any questions, please contact Howard Hall at 919-856-4520, ext. 27 or by e-mail at <howard_hall@fws.gov>.

Sincerely,



for Garland B. Pardue, Ph.D.
Ecological Services Supervisor

cc:

Gerald Miller US EPA, Atlanta, GA
Ron Sechler, National Marine Fisheries Service, Beaufort, NC
Mike Hinton, Natural Resources Conservation Service, Raleigh, NC
Shannon Deaton, NC Wildlife Resources Commission, Raleigh, NC
Mr. John Dorney, NC Division of Water Quality, Raleigh, NC

Donna Moffitt, NC Division of Coastal Management, Raleigh, NC
 Preston Pate, NC Division of Marine Fisheries, Morehead City, NC

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North Carolina Wildlife Resources Commission

Charles R. Fullwood, Executive Director

MEMORANDUM

TO: Melba McGee
Office of Legislative & Intergovernmental Affairs

Stacy Samuelson
Army Corps of Engineers

FROM: David R. Cox, Supervisor
Habitat Conservation Section 

DATE: September 2, 2003

SUBJECT: Request for scoping comments to aid preparation of an Environmental Assessment (EA) for clearing and snagging operations in federal project areas of the Atlantic Intracoastal Waterway (AIWW), Lockwoods Folly River, Pasquotank River, Shallotte River, Cape Fear River below Fayetteville, Cashie River below Windsor, Chowan River below Winton, Neuse River below New Bern, New River below Jacksonville, Tar/Pamlico River below Greenville, and Roanoke River below Palmyra. Project Number: 04-0033.

The North Carolina Wildlife Resources Commission provides these initial comments regarding potential impacts to wildlife and fishery resources in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), Section 401 of the Clean Water Act (as amended), and North Carolina General Statutes (G.S. 113-131 et seq.).

While we have considerable experience reviewing more inland Emergency Watershed Protection (EWP) and Section 10 clearing and snagging projects, particularly in the wake of hurricanes, we are concerned over the subject list of waters and the need to remove any woody material from them at all. These are mostly relatively wide and open rivers or waterways with seemingly low potential for shoreline treefall becoming a significant obstruction to navigation. A cursory inquiry of our District Fisheries Biologists revealed no known hazards to navigation in

these waters. Based on the extent of unknown or undescribed need-related factors alone, the EA should provide a comprehensive description of the federally-maintained channel, including spatial limits in relation to the rivers listed, frequency and type of use (recreational boats, tugs and barges, etc.), the specific locations of problem areas in need of snagging, and how problem areas were identified along with who identified them for each water body. In short, all work should be well justified and documented. River reaches not having justifiable problem areas should be avoided by all clearing and snagging operations. Generally, we do not consider “pre-emptive” removal of woody debris (snagging of wood accumulated at tributary mouths, for example) that is not obstructing a primary river channel to be justified.

It is becoming increasingly recognized that removal of woody debris from streams can have a profound and measurable adverse impact on aquatic communities. Specific potential problems include:

- 1) Fish forage reduction: Snags provide large amounts of surface area for biofilm and macroinvertebrate colonization and offer better growing conditions than the anerobic mud characterizing much of the bottom in coastal streams. In sandy bottomed rivers where woody substrate is often the only hard substrate available for colonization, most of the food for aquatic animals is found on snags. Twigs and limbs protruding above the water surface provide emergence sites for aquatic insects having a terrestrial adult life stage.
- 2) Fish refuge reduction: Cover provided by snags and other woody debris are important refuges for many small riverine fishes enabling them to sustain larger populations. These smaller fishes are important food sources for resident gamefish species. In rivers having significant flow, the reduced water velocity behind large woody debris provides resting and feeding sites for anadromous fish during their spawning migration.
- 3) Aquatic wildlife habitat reduction: Kingfishers use the exposed limbs of snags as perches and wading birds use partially submerged logs as feeding sites. Snags trap duckweed, acorns, and other mast, creating concentrations of food for wood ducks and other waterfowl that are particularly important during periods of winter freeze-up. Aquatic turtles and snakes often climb out of the water using snag surfaces. Muskrats and river otters use logs as feeding stations.
- 4) Increased nutrient loading downstream: The biological community supported by snags removes large amounts of organic matter and nutrients from upstream waters, converting them to forms readily suitable for transfer up the food chain to fish or waterfowl.
- 5) Increased turbidity during snag removal: Bottom disturbances during the spring spawning season have the potential to adversely effect recruitment of resident and anadromous fishes in and downstream of the project site. Settling of sediments during the critical egg and/or fry life history stage has the potential to significantly reduce fish densities in the impact area.

In order to minimize the above-listed impacts, we recommend the following actions:

- 1) Water bodies designated as anadromous fish spawning areas require an in-water work moratorium from February 15 to September 31. Water bodies not designated as anadromous fish spawning areas have an in-water work moratorium from April 1 to September 31. We strongly request that all in-water work except hand labor adhere to these moratoria.
- 2) To minimize turbidity and re-suspension of possible contaminants, any barge or large vessel operations should be restricted to water depths where bottom sediments will not be disturbed. Turbidity levels should not exceed the NTU limit established for appropriate class water (e.g., Class C = 50 NTUs).
- 3) Some of the streams and stream segments proposed for work may contain State and/or Federally listed species. We recommend close coordination with the NC Natural Heritage Program.
- 4) Only trees obstructing navigation should be targeted for work. In the event a downed tree is laying perpendicular to the channel and obstructing navigation, we prefer that it be cut in a hinge-like manner at the base and folded back parallel and adjacent to the shoreline instead of removing it from the aquatic system. The "modified" tree can be cabled in place if necessary. Severely leaning trees that obstruct navigation can be cut and cabled in a similar manner.
- 5) Root wads of hinge-cut trees should be left in place and on their original alignment.
- 6) Bushes, limbs and other materials hanging in or over the water that do not obstruct flow or navigation should not be removed.
- 7) As much work as possible should be performed from the stream channel, by hand or using small boats, to minimize impacts to stream banks.

Due to the broad scope of the subject EA, we suggest that a draft version of the document be circulated for review prior to issuance of a final draft. Also, since type, duration, and timing of work as well as natural resources present may vary between water bodies, we recommend that a separate Public Notice be circulated for review for each water body. If woody material is to be marked for snagging, we would appreciate an opportunity to assist in that effort. We further suggest that a preconstruction meeting of agency representatives and snag/clear workers be held prior to initiation of work on each river to promote the best possible understanding of methodologies to be employed.

Thank you for the opportunity to comment at this early project stage. If you have questions regarding these comments, please call Bennett Wynne at (252) 522-9736.

Cc: Doug Huggett, NC Division of Coastal Management
Mike Street, NC Division of Marine Fisheries
Howard Hall, US Fish and Wildlife Service
Ron Sechler, National Marine Fisheries Service



North Carolina Department of Environment and Natural Resources
Division of Marine Fisheries

Michael F. Easley, Governor
William G. Ross, Jr., Secretary

Preston P. Pate, Jr., Director

Memo To: Melba McGee, DENR Environmental Coordinator
Guy Pearce, DCM Consistency Coordinator
Stacy Samuelson, COE (CESAW-TS-PE)

From: Mike Street

Subject: Scoping for proposed Corps of Engineers (COE) clearing and snagging project

Date: 2 September 2003

These comments on the subject project are provided by the North Carolina Division of Marine Fisheries (DMF) under authority of G.S. 113-131.

The DMF has commented on clearing and snagging projects several times over the last 10 – 20 years. Several of these projects have been poorly done, such as clearing much more of the stream than needed for navigation and using methods/equipment that result in removal of bottom sediments in addition to actual snags. This history makes us cautious.

Woody debris is important to a stream's biological and physical processes. Woody debris interacts with stream flow to shape the stream's morphologic and hydraulic characteristics, provides habitat for invertebrate and vertebrate prey organisms, contributes to energy flow and nutrient cycling in the stream, and provides protective cover for the young of many economically important recreational and commercial fisheries species. Woody debris also provides cover for fishes that feed by ambushing their prey.

All of the water bodies listed in the COE letter support anadromous fish species, serving as spawning and/or nursery areas or migratory corridors, except the AIWW, Lockwoods Folly River, and Shallotte River.

We urge that the guidelines suggested below be addressed in the proposed Environmental Assessment. Be aware that, as the assessment develops, it may become appropriate to change the document to an Environmental Impact Statement.

- All clearing and snagging work must be limited to only that work necessary to allow safe navigation for the boats and vessels for which the subject channel is designed. The project must not be used as a means to deepen or widen the channel. We have seen this type of work attempted.
- All clearing and snagging work must be limited to the authorized channel of the river. Where there is no maintained channel, work should be limited to the channel third of the stream.
- Materials placed along the stream edge must not interfere with natural stream circulation and flow in the adjacent areas, especially during normal high-water periods.

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Phone: 252-726-7021 \ FAX: 252-727-5127 \ Internet: www.ncdmf.net

- All clearing and snagging work in streams with anadromous fish resources must be limited to the period of minimal use by such fishes; that is, no in-stream work should be done during the period of 15 February – 30 September. Other moratoria may also apply to protect other important aquatic resources.
- Equipment used should exert minimal environmental impacts. For example, grappling-type equipment should be used to remove materials from the bottom rather than buckets or shovel-type equipment.
- Trees overhanging the stream should be removed only if they lean at an angle of at least 45°.
- Use only chainsaws and other hand-operated equipment to remove trees whenever possible, both for standing trees and snags already in the stream.

cc: Sara Winslow
Sean Mckenna
Mike Marshall
Fritz Rohde

DEPARTMENT OF ENVIRONMENT AND
NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH

Project Number 04-0033
County New Hanover

Inter-Agency Project Review Response

Project Name U.S. Army Corps of Eng. Wilmington District Type of Project Clearing and snagging operations in the federal project areas

Comments provided by:

- ☐ Regional Program Person
- ☒ Regional Engineer for Public Water Supply Section
- ☐ Central Office program person

Name: FRED HILLDate: 8/11/63Telephone number: 252-746-6481

Program within Division of Environmental Health:

- ☒ Public Water Supply
- ☐ Other, Name of Program: _____

Response (check all applicable):

- ☐ No objection to project as proposed
- ☐ No comment
- ☐ Insufficient information to complete review

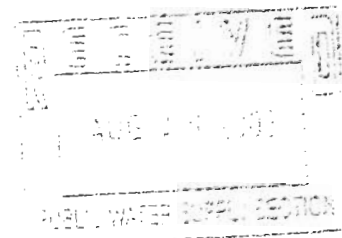
*This project affects several countries, but no surface water intakes, except area Cape Fear River at Lock No. 1. **

Caution should be exercised for water & wastewater plant's submerged discharge piping & bank related structures.

** Specific water intakes for City of Wilmington, lower Cape Fear W&S Authority & International Paper Co (Refineries) are in the vicinity of CF River Lock No. 1.*

Return to:

Public Water Supply Section
Environmental Review Coordinator
for the
Division of Environmental Health



DEPARTMENT OF ENVIRONMENT AND
NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH

Project Number
County

Inter-Agency Project Review Response

Project Name _____ Type of Project _____

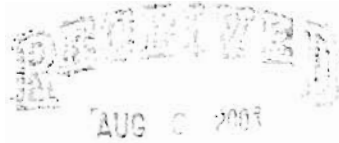
- ☐ The applicant should be advised that plans and specifications for all water system improvements must be approved by the Division of Environmental Health prior to the award of a contract or the initiation of construction (as required by 15A NCAC 18C .0300et. seq.). For information, contact the Public Water Supply Section, (919) 733-2321.
- ☐ This project will be classified as a non-community public water supply and must comply with state and federal drinking water monitoring requirements. For more information the applicant should contact the Public Water Supply Section, (919) 733-2321.
- ☐ If this project is constructed as proposed, we will recommend closure of _____ feet of adjacent waters to the harvest of shellfish. For information regarding the shellfish sanitation program, the applicant should contact the Shellfish Sanitation Section at (252) 726-6827.
- ☐ The soil disposal area(s) proposed for this project may produce a mosquito breeding problem. For information concerning appropriate mosquito control measures, the applicant should contact the Public Health Pest Management Section at (252) 726-8970.
- ☐ The applicant should be advised that prior to the removal or demolition of dilapidated structures, a extensive rodent control program may be necessary in order to prevent the migration of the rodents to adjacent areas. For information concerning rodent control, contact the local health department or the Public Health Pest Management Section at (919) 733-6407.
- ☐ The applicant should be advised to contact the local health department regarding their requirements for septic tank installations (as required under 15A NCAC 18A. 1900 et. sep.). For information concerning septic tank and other on-site waste disposal methods, contact the On-Site Wastewater Section at (919) 733-2895.
- ☐ The applicant should be advised to contact the local health department regarding the sanitary facilities required for this project.
- ☐ If existing water lines will be relocated during the construction, plans for the water line relocation must be submitted to the Division of Environmental Health, Public Water Supply Section, Technical Services Branch, 1634 Mail Service Center, Raleigh, North Carolina 27699-1634, (919) 733-2321.
- ☐ For Regional and Central Office comments, see the reverse side of this form.

Reviewer

Section/Branch

Date

NORTH CAROLINA STATE CLEARINGHOUSE
DEPARTMENT OF ADMINISTRATION
INTERGOVERNMENTAL REVIEW



STATE NUMBER: 04-E-0000-0033
DATE RECEIVED: 08/04/2003
AGENCY RESPONSE: 09/01/2003
REVIEW CLOSED: 09/04/2003

H06

MS RENEE GLEDHILL-EARLEY
CLEARINGHOUSE COORD
DEPT OF CUL RESOURCES
ARCHIVES-HISTORY BLDG - MSC 4617
RALEIGH NC

REVIEW DISTRIBUTION
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DEPT OF AGRICULTURE
DEPT OF CUL RESOURCES
DEPT OF TRANSPORTATION



CH03 -
A MWR, eqm 8/28/03
see attached
SNC 8/24/03

PROJECT INFORMATION

APPLICANT: U. S. Army Corps of Engineers
TYPE: National Environmental Policy Act
ERD: Scoping

DESC: US Army Corp of Engineers proposes to remove debris and hazards from navigation channels that may prevent/hamper passage of transiting vessels.

Multi Co.

The attached project has been submitted to the N. C. State Clearinghouse for intergovernmental review. Please review and submit your response by the above indicated date to 1302 Mail Service Center, Raleigh NC 27699-1302.

If additional review time is needed, please contact this office at (919)807-2425.

AS A RESULT OF THIS REVIEW THE FOLLOWING IS SUBMITTED:



NO COMMENT



COMMENTS ATTACHED

SIGNED BY:

Renee Gledhill-Earley

RECEIVED

DATE:

8/29/03

AUG 06 2003



North Carolina Department of Cultural Resources
State Historic Preservation Office

David L. S. Brook, Administrator

Michael F. Easley, Governor
Lisbeth C. Evans, Secretary
Jeffrey J. Crow, Deputy Secretary

Division of Historical Resources
David J. Olson, Director

August 28, 2003

TO: W. Coleman Long, Chief
Planning and Environmental Branch
Army Corps of Engineers, Wilmington District

FROM: David Brook *for David Brook*

SUBJECT: Clearing and snagging in federal project areas, CH 03-2106, Multi-county



We have reviewed information concerning the above project from the State Clearinghouse.

The Underwater Archaeology Branch staff feel that important submerged cultural resources may be affected during this proposed snagging and clearing project. This is based on historical research that indicates that the remains of numerous ships and other cultural materials lie within the submerged waters of the state.

While the nature and extent of the bottom disturbance caused by the snagging operation does not support recommendations for an archaeological survey, we would like your agency, the applicant, and the equipment operator to be aware that the possibility exists this work may encounter submerged archaeological remains. In the event that such occurs, work should move to another area and the Underwater Archaeology Branch be contacted immediately (910/458-9042). A staff member will be sent to assess the wreckage and determine the proper course of action.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act of 1966 and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763. In all future communication concerning this project, please cite the above referenced tracking number.

✓
Cc: State Clearinghouse

www.hpo.dcr.state.nc.us

	Location	Mailing Address	Telephone/Fax
ADMINISTRATION	507 N. Blount St., Raleigh NC	4617 Mail Service Center, Raleigh NC 27699-4617	(919) 733-4763 • 733-8653
RESTORATION	515 N. Blount St., Raleigh NC	4613 Mail Service Center, Raleigh NC 27699-4613	(919) 733-6547 • 715-4801
SURVEY & PLANNING	515 N. Blount St., Raleigh NC	4618 Mail Service Center, Raleigh NC 27699-4618	(919) 733-6545 • 715-4801

September 15, 2003

District Engineer
Attn: Stacy Samuelson (CESAW-TS-PE)
U.S. Army Corps of Engineers
Wilmington District
P.O. Box 1890
Wilmington, North Carolina 28402-1890

Dear Mr. Samuelson:

Thank you for the opportunity to provide comments supporting the proposed Environmental Assessment for clearing and snagging operations for eastern North Carolina Rivers including the Roanoke River below the Palmyra landing.

Recently, a USACE snagging operation in Devil's Gut brought to a head many of the concerns shared by natural resources agencies and organizations in relation to snagging operations. We welcome your proactive response.

The mission of The Nature Conservancy is to preserve the native plants, animals and natural communities that represent the diversity of life on earth by protecting the lands and waters they need to survive. Our comments are based on our goal of serving our mission through our conservation work in the project area.

Eastern North Carolina represents a globally important natural region. Included within the boundaries of your proposed snagging operations are unique and important natural areas, including the largest and least disturbed bottomland hardwood forest complex in the mid-Atlantic region. The Roanoke and its neighboring swamp habitats support seven species of anadromous fishes dependent on these critical waters for reproduction and development through their early life stages. The project region is also home to many rural human communities who depend on, recreate in, and value these precious natural resources. Nature-based tourism is emerging as an important part of the local economy, including fishing, paddle sports, bird watching and hunting.

All of the major rivers and waterways in the coastal plain region flow through forested communities, which in turn provide woody debris and large woody material to the rivers and creeks. This debris is an important and often limited aquatic habitat. Algae, insects and juvenile fishes thrive on the structural components and the primary production afforded by this woody debris. As the seasons change so do the occupants of this critical underwater debris habitat, none more famous than the Blueback Herring and the Alewife.

Both of these anadromous fishes utilize this underwater debris habitat in their early life stages. Importantly, the woody debris enables sticky eggs of these two species to attach and provide critical early development habitat. In addition, residential fishes make home in these sought after niches. Experienced fisherman instinctively seek out fallen trees and overhanging vegetation to fish. This behavior is stimulated by the fact that juvenile fishes, both resident and anadromous, seek out this habitat for food and cover.

Above the water, old snags and leaning trees serve as important foraging habitat for woodpeckers and home for cavity nesting species like wood ducks, prothonotary warblers, and some bats. As the debris falls or sloughs into the river it continues to serve as important perching, sunning, and nesting habitat. Bald Eagles, herons, egrets, owls, and kingfishers as well as river otters and mink are a few of the many species often seen on this debris.

Ecologically this debris is a precious commodity for those plants and animals tied to it for part of their life history strategy. As a result of the significance of this habitat in aquatic systems and the neighboring lands we respectfully request the USACE to address the following issues in your draft environmental assessment:

- A clear and well-defined assessment of the need for snagging operations as it relates to the 1899 Rivers and Harbors act and subsequent authorizing legislation. There have been many changes in commercial navigation along our waterways and it seems reasonable to suggest that current river reaches authorized for snagging may reasonably, through public review, be de-authorized. An example of this includes the 1986 de-authorization of the Roanoke River stretch from Weldon to Palmyra. If river traffic does not warrant it, we recommend against clearing and snagging.
- A well defined protocol, including public notification, that defines the need for initiating snagging operations, the scale and location of the operation, and the methodology for the operation. Such a protocol should provide for snagging gear alternatives.
- Beneficial uses of legitimately removed debris to help support and sustain the integrity of the ecological system. For example where large trees **need to be** removed to meet navigational needs instead of piling them up on the land perhaps they could be anchored in a safe zone where they can be a greater benefit to the system. We encourage this mechanism to be mutually developed by the resources agencies, interested parties and the USACE.
- Timing of the snagging operations. There are critical periods throughout the year like the spawning season for Blueback Herring and Alewife or the nesting season for neotropical birds, when snagging activities should be limited.
- Conflict avoidance. The NC Natural Heritage Program should be continuously consulted to determine the location of all dedicated and registered state natural areas, all publicly and privately owned conservation lands, and all state and federal listed

species of concern. A very significant portion of the land on both sides of the Roanoke from Palmyra to the mouth of the river is in conservation ownership by The Nature Conservancy, the US Fish and Wildlife Service, and the NC Wildlife Resources Commission. These three agencies are adding tracts to their conservation ownership on a routine basis (e.g., all three have acquired tracts in 2003). They should be consulted prior to any snagging, clearing, or dredging operation on the Roanoke.

Thank you again for the opportunity to provide comments to your Environmental Assessment process. I would like to reiterate, on behalf of The Nature Conservancy, our continued interest in working with USACE to improve the ecological impacts of your operations.

Sincerely,

A handwritten signature in black ink, reading "Sam Pearsall". The signature is fluid and cursive, with the first name "Sam" and last name "Pearsall" clearly distinguishable.

Sam Pearsall, Ph.D.
Director of Science
Roanoke River Project Director
Spearsall@tnc.org



UNITED STATES MARINE CORPS

MARINE CORPS BASE

PSC Box 20004

Camp Lejeune, North Carolina 28542-0004

IN REPLY REFER TO:

5090

BEMD

2 SEP 2003

Mr. Stacey Samuelson
(CESAW-TS-PE)
U. S. Army Corps of Engineers
Wilmington District
Post Office Box 1890
Wilmington, North Carolina 28402-1890

Dear Mr. Samuelson:

This is in response to your letter of July 31, 2003 requesting comments regarding preparation of an Environmental Assessment (EA) for clearing and snagging operations in federal project areas including the Atlantic Intracoastal Waterway, New River below Jacksonville, North Carolina, Neuse River below New Bern, etc.

We respectfully request the opportunity to review and comment on the EA. Should your agency issue a Finding Of No Significant Impact, please ask your project manager to coordinate with us regarding placement of snags on Marine Corps Base Camp Lejeune property. Point of contact regarding this matter is Mr. Tom Barbee, NEPA Program Manager, Environmental Conservation Branch, Environmental Management Division, at (910) 451-9363.

Sincerely,

A handwritten signature in black ink, appearing to read "Scott A. Brewer", is written over a rectangular area.

SCOTT A. BREWER, P.E.

Director, Environmental Management

By direction

of the Commanding General



North Carolina Department of Environment and Natural Resources

Michael F. Easley, Governor

August 29, 2003

William G. Ross Jr., Secretary

District Engineer
U.S. Army Corps of Engineers, Wilmington District
PO Box 1890
Wilmington, North Carolina 28402-1890

Dear Mr. Samuelson:

In order to adequately identify the environmental impacts of the proposed clearing and snagging operations as indicated in the letter of July 31, 2003, the Natural Heritage Program recommends that the Corps conduct a careful analysis for each river segment. Specific information regarding the locations of the following resources should be addressed:

- federal and state endangered and threatened species;
- significant natural heritage areas;
- state protected conservation lands, including Dedicated State Nature Preserves, Registered Natural Heritage Areas, or lands with conservation easements held by the Clean Water Management Trust Fund or the Ecosystem Enhancement Program; and,
- properties managed as State Parks, State Game Lands, or North Carolina Coastal Reserves.

This information is available from the NC Natural Heritage Program as existing GIS layers which should be consulted as part of the development of the Environmental Analysis. Much of this information has already been provided to the Wilmington Office of the Corps.

Incorporation of this information into the Environmental Analysis is part of an agreement reached at a meeting of the Corps of Engineers, the U.S. Fish and Wildlife Service, the Department of Environment and Natural Resources, the Wildlife Resources Commission, and The Nature Conservancy following the cutting of live trees from the Devil's Gut Dedicated State Nature Preserve during the Spring of 2003.

Please let me know if you need additional information.

Sincerely,

Linda P. Pearsall, Head
Natural Heritage Program

LPP/lpp



North Carolina Department of Environment and Natural Resources
Division of Coastal Management

Michael F. Easley, Governor

Donna D. Moffitt, Director

William G. Ross, Jr., Secretary

15 August 2003

Mr. Stacy Samuelson, District Engineer
U.S. Army Corps of Engineers, Wilmington District
Post Office Box 1890
Wilmington, North Carolina 28402-1890

Dear Mr. Samuelson,

This letter is in response to a 31 July 2003 letter from W. Coleman Long, Planning and Environmental Branch Chief, of your office, requesting comments for proposed clearing and snagging operations in federal project areas located in various locations of Eastern North Carolina. The purpose of the correspondence was to identify and discuss potential impacts of such operations, timing, and the possibility of permit requirements. The Atlantic Intercoastal Waterway, Cashie River below Windsor, Chowan River below Winton, Roanoke River below Palmyra Landing, and the Pamlico and Tar River below Greenville are within counties subject to the permit requirements of the Coastal Area Management Act (CAMA) and the State Dredge and Fill Law. Beaufort, Bertie, Hertford, Hyde, Tyrrell, and Washington Counties are within the work area supervised by the Division of Coastal Management staff of the Washington Regional Office.

From my review of your definition of snagging as described in the 31 July 2003 letter to this office, the activity may not fall within the description of development as defined in G.S. 113A-103(5)a. However, 15A NCAC 07H .0203 states in part that "the objective of the Coastal Resource Commission is to conserve and manage Estuarine Waters, Coastal Wetlands, Public Trust Areas and Estuarine and Public Trust Shorelines (AECs) so as to safeguard and perpetuate their biological values to ensure that development within these AECs is compatible with natural characteristics so as to minimize the likelihood of significant loss to the public resource." Consequently, at this time and on behalf of the Division of Coastal Management, I would like to offer the following comments, guidelines, and recommendations:

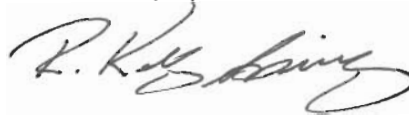
1. Any clearing and/or snagging will be confined to the center half of the stream or the designated/established channel.
2. Timing of such activities in anadromous streams should comply with established moratoriums.
3. Under the pretense of this operation (snagging) no stumps and/or root balls still embedded and/or attached to the bank are to be removed.

Mr. Stacy Samuelson, District Engineer
U.S. Army Corps of Engineers, Wilmington District
15 August 2003
Page 2

4. The Washington Regional Office requests pre-construction notice prior to initiating any clearing and snagging operations within the Washington District.

I appreciate your effort to solicit comments from the Division of Coastal Management concerning this matter and encourage you to continue to consult representatives of this Division for future questions regarding CAMA jurisdiction. If you have any questions about this or related matters, please call me at 252-946-6481 ext 280.

Sincerely,

A handwritten signature in black ink, appearing to read "R. Kelly Spivey", written over a light gray rectangular background.

R. Kelly Spivey
Coastal Management Representative

- c: Terry E. Moore – District Manager, Washington Office, DCM
Doug Huggett - Major Permits Coordinator, DCM
Guy Pearce - Federal Consistency Coordinator, DCM
Raleigh Bland - Washington Regulatory Office, USACOE

APPENDIX D

General Water Quality Certification #3348

WQC #3348

**GENERAL CERTIFICATION FOR PROJECTS ELIGIBLE
FOR CORPS OF ENGINEERS REGIONAL (GENERAL) PERMIT NUMBER
198600020 (FISH ENHANCEMENT STRUCTURES IN TROUT WATERS), REGIONAL
(GENERAL) PERMIT NUMBER 198500194 (ARTIFICIAL REEFS AND FISH ATTRACTORS),
NATIONWIDE PERMIT NUMBER 15 (U.S. COAST GUARD APPROVED BRIDGES)
AND RIPARIAN AREA PROTECTION RULES (BUFFER RULES)**

This General Certification is issued in conformity with the requirements of Section 401, Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Quality Regulations in 15A NCAC 2H, Section .0500 and 15A NCAC 2B .0200 for the discharge of fill material to waters and wetland areas as described in the Wilmington District's Regional (General) Permit Number 198600020 (Fish Enhancement Structures in Trout Waters) and Regional (General) Permit Number 198500194 (Artificial Reefs and Fish Attractors) or as described in 33 CFR 330 Appendix A (B) (15) and for the Riparian Area Protection Rules (Buffer Rules) in 15A NCAC 2B .0200. This Certification replaces Water Quality Certification Numbers 2667, 2677 and 2678 issued on January 21, 1992, Certification Numbers 3098 and 3104 issued on February 11, 1997, and Certification Number 3276 issued on June 1, 2000. This WQC is rescinded when the Corps of Engineers re-authorizes any of these Nationwide or Regional (General) Permits or when deemed appropriate by the Director of the DWQ.

The State of North Carolina certifies that the specified category of activity will not violate applicable portions of Sections 301, 302, 303, 306 and 307 of the Public Laws 92-500 and 95-217 if conducted in accordance with the conditions hereinafter set forth.

Conditions of Certification:

1. Proposed fill or substantial modification of wetlands or waters (including streams) under this General Certification requires application to and prior written concurrence from the Division of Water Quality;
2. Appropriate sediment and erosion control practices which equal or exceed those outlined in the most recent version of the "North Carolina Sediment and Erosion Control Planning and Design Manual" or the "North Carolina Surface Mining Manual" whichever is more appropriate (available from the Division of Land Resources (DLR) in the DENR Regional or Central Offices) shall be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to assure compliance with the appropriate turbidity water quality standard;
3. All sediment and erosion control measures placed in wetlands or waters shall be removed and the original grade restored within two months after the Division of Land Resources has released the project;
4. If an environmental document is required, this Certification is not valid until a Finding of No Significant Impact (FONSI) or Record of Decision (ROD) is issued by the State Clearinghouse;
5. Measures shall be taken to prevent live or fresh concrete from coming into contact with waters of the state until the concrete has hardened. All reefs or fish enhancement structures shall be constructed of materials which are not toxic to aquatic life;
6. Native species of forested vegetation shall be re-established in any construction access or other temporary impact area occurring in a protected buffer zone within the next growing season following construction of a project;

WQC #3348

7. Impacts to any stream length in the Neuse, Tar-Pamlico, Randleman and Catawba River Basins (or any other river basins with Riparian Area Protection Rules [Buffer Rules] in effect at the time of application) requires written concurrence from DWQ in accordance with 15A NCAC 2B.0200. Activities listed as "exempt" from these rules do not need to apply for written concurrence under this Certification. New development activities located in the protected 50-foot wide riparian areas (whether jurisdictional wetlands or not) within the Neuse, Tar-Pamlico Randleman and Catawba River Basins shall be limited to "uses" identified within and constructed in accordance with 15A NCAC 2B .0200. All new development shall be located, designed, constructed, and maintained to have minimal disturbance to protect water quality to the maximum extent practicable through the use of best management practices;
8. In accordance with 15A NCAC 2H .0506 (h) compensatory mitigation may be required for impacts to 150 linear feet or more of streams and/or one acre or more of wetlands. In addition, buffer mitigation may be required for any project with Buffer Rules in effect at the time of application for buffer impacts resulting from activities classified as "allowable with mitigation" within the "Table of Uses" section of the Buffer Rules or require a variance under the Buffer Rules. A determination of buffer, wetland and stream mitigation requirements shall be made for any Certification for this Nationwide Permit. The most current design and monitoring protocols from DWQ shall be followed and written plans submitted for DWQ approval as required in those protocols. When compensatory mitigation is required for a project, the mitigation plans must be approved by DWQ in writing before the impacts approved by the Certification occur. The mitigation plan must be implemented and/or constructed before any permanent building or structure on site is occupied.
9. In accordance with North Carolina General Statute Section 143-215.3D(e), any request for written concurrence for a 401 Water Quality Certification must include the appropriate fee. If a project also requires a CAMA Permit, one payment to both agencies shall be submitted and will be the higher of the two fees. The fee shall be collected and distributed between the two agencies in accordance with agreements reached between the Division of Water Quality and the Division of Coastal Management;
10. Additional site-specific conditions may be added to projects for which written concurrence is required or requested under this Certification in order to ensure compliance with all applicable water quality and effluent standards;
11. Concurrence from DWQ that this Certification applies to an individual project shall expire three years from the date of the cover letter from DWQ or on the same day as the expiration date of the corresponding Nationwide and Regional General Permits, whichever is sooner;
12. When written concurrence is required, the applicant is required to use the most recent version of the Certification of Completion form to notify DWQ when all work included in the 401 Certification has been completed.

Non-compliance with or violation of the conditions herein set forth by a specific fill project shall result in revocation of this Certification for the project and may result in criminal and/or civil penalties.

The Director of the North Carolina Division of Water Quality may require submission of a formal application for individual certification for any project in this category of activity that requires written concurrence under this certification, if it is determined that the project is likely to have a significant adverse effect upon water quality or degrade the waters so that existing uses of the wetland, stream or downstream waters are precluded.

WQC #3348

Public hearings may be held for specific applications or group of applications prior to a Certification decision if deemed in the public's best interest by the Director of the North Carolina Division of Water Quality.

Effective date: 18 March 2002

DIVISION OF WATER QUALITY

By

Gregory J. Thorpe, Ph.D.

Acting Director

WQC # 3348